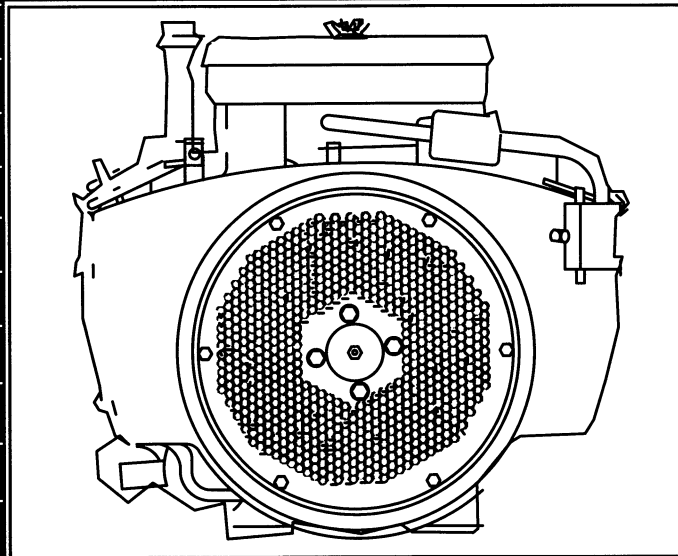




# Product Guide

## Replacement Engine Reference Catalog

### Onan Spark Ignition Industrial Engines



**\*\* CONFIDENTIAL NATURE OF REPLACEMENT ENGINE REFERENCE CATALOG\*\***

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## Introduction

### General

Historically, Onan has attempted to offer replacement engines which require little or no modification to the existing, Onan-powered piece of equipment. With the large number of engine configurations and age of these applications, this task has become increasingly difficult, inefficient and, with the obsolescence of certain engine families, no longer possible. The current replacement engine program is designed to service a majority of these older models by using a limited number of standard replacement engines customized with Onan distributor or dealer installed kits. This catalog is intended to assist the distributor or dealer engine sales person in providing, if possible, end-users with a new, comparable and, in the case of older models, an improved power plant; it should be used in conjunction with other engine sales/service literature, such as the latest L-740 Price List, F-734 Engine Options & Kits, and applicable parts manuals. It is formatted similar to and supercedes all previously published replacement engine information for Onan manufactured spark ignition industrial engines.

The decision to replace the complete engine or short block/repair it should be based on the circumstances of each situation, such as engine condition, urgency for completion of repair, and cost to customer. Some advantages of replacing the engine are: 1) longer and transferable warranty, 2) fewer repairs, less maintenance and lower cost service parts, and 3) latest design improvements, including electronic ignition and emissions certification. Each engine replacement situation involves unique features which determine the alternatives from which a customer can choose. The information provided in this catalog will allow sales personnel to offer suggestions to the customer. Certain situations require that a considerable number of changes be made to the replacement engine or equipment; if the customer desires not to make these changes or a suitable replacement cannot be identified, a short block assembly can be supplied, if available.

### Engine Cross Reference Charts

Original engine model, customer, and crankshaft data are followed by a suggested replacement engine, if any, and any application notes or kits needed. Specification letters have been left off because the original and replacement engines are interchangeable at all customer interface points regardless of spec letter, unless otherwise noted. Customer information pertains to the distributor or company the original model was first sold to or the name of the OEM. The crankshaft rear PTO stub type is shown or denoted by the Sales Code (or equivalent Sales Code) for either the original and/or replacement model. In some instances the original and replacement engine PTO stubs are different; however, they are functionally interchangeable. The notes following the replacement engine model relate to the significant areas affected.

The replacement engine information provided is an estimate based on available information concerning the OEM application and how the engine was originally equipped by Onan. If the specified replacement model is shown in parentheses, this signifies that it is not a standard replacement engine but can be used for replacement purposes as long as it remains an active, current production spec. Where the original engine is a 16 or 18 HP engine (any spec) and is replaced by a 20 HP engine (e.g. specs 10893, 10933, 10940, 11253, 11254, & 11255), it might be possible in some cases and more acceptable for the customer to use a 16 or 18 HP stock engine. A situation where this won't work is if the 10933 or 10940 engine is specified and the six-hole block is required: the six-hole block feature is available only from the factory and is not on any stock Performer model.

The standard replacement engine model shown is typically not a direct or drop-in replacement. Parts from the original engine, kits, or modifications, such as electrical rewiring, or a combination, are usually required to obtain the same functional configuration as the original engine. When noted, hardware from the original engine may be used and, therefore, not all suggested kits will be required. In general, emissions certified engines are one-way interchangeable, new for old, with non-certified engines, and to maintain their certification any emissions related modification must be done with a CARB (California Air Resources Board) approved kit only.

(cont.)

## Introduction (cont.)

N/A = "not available". No replacement engines exist for the J Series, L25, LKB, NB, RCCK, or Vacu-Flo N or CCK Series engines (Note: this also generally applies to any Onan manufactured diesel industrial engine or any genset powered by an Onan manufactured engine.) For all other engine models, N/A indicates there is either no suitable Performer replacement engine or, especially for the CCK/NH models, there is usually insufficient information available and/or potential irreconcilable differences to allow a suggestion to be made. Although the latter doesn't eliminate the possibility of using a Performer engine, the specifics of each case must be analyzed to determine if replacement with the Performer is possible or practical. Unless this analysis is done, a short block is suggested, if available.

### Warranty Information

The responsibility for proper engine installation belongs to the parties involved in each specific replacement situation. The information in this catalog should be used as a guide and is not a guarantee of complete compatibility in every situation where it might be applied. Before any action is taken, all information should be reviewed with the customer for their approval, so they are able and prepared to adapt, if necessary, to the new configuration. The Onan Warranty statement lists the coverage and responsibility of both the Onan Corp and the end user. For reliability, service, and warranty reasons, parts reused from the original engine should be limited to those not normally subjected to wear or degradation. Used parts are not warrantable items and new parts, including kits, are covered under the new engine warranty only if installed by an Onan authorized representative. Only workmanship done by the factory or other Onan authorized representative is covered.

### Ordering and Service Information

Before ordering an engine for replacement purposes, always check factory inventory first for the original or actual engine model being replaced. Older OEM specs are sometimes considered excess inventory and might be specially discounted and require few, if any, modifications. When replacing an engine with another in the same family, such as the Performer, it's customary that the spec letter of the replacement engine be the same or higher than the spec letter of the original engine, unless the customer is notified and agrees otherwise.

The use of kits can be helpful when servicing parts later on. Many kits include a label such that when properly marked and affixed to the engine being modified, it can aid in ordering the correct part when the factory equipped configuration has been altered in the field.

All information, illustrations, and specifications contained in this catalog are based on the latest product information available at the time of publication. Onan reserves the right to make changes at any time without notice.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>B43E</u></b>				
B43E-GA016/ 4130	Deere - 316	45BD	P220G-I/10935	5, 6, 49, 62
B43E-GA016/ 4232	Deere - 316	45BD	P220G-I/10935	5, 6, 49, 62
B43E-GA016/ 4239	Wollard	45BB	P220G-I/10940	5, 16, 50
B43E-GA016/ 4246	Wollard	45BB	P220G-I/10940	5, 50, 61, 62
B43E-GA016/ 4247	Malte Manson	45BB	P220G-I/10940	5
B43E-GA016/ 4260	Stock	45BB	P220G-I/10940	5, 50
B43E-GA016/ 4303	Wollard	45BB	P220G-I/10940	3, 5, 50, 93
B43E-GA016/ 4313	Lincoln	45BG	P216G-I/10939	84
B43E-GA016/ 4317	Standby Power	45BF	N/A	
B43E-GA016/ 4318	Wollard	45BB	P220G-I/10940	50, 61, 62
B43E-GA016/ 4326	Deere - 316	45BD	P220G-I/11128	5, 6, 49, 62
B43E-GA016/ 4335	Ingram Kut-Mor	45BT	P220G-I/11255	5, 37, 85
B43E-GA016/ 4350	Harrison	45BB	P220G-I/10940	5, 50, 61, 62
B43E-GA016/ 4355	Belco Ind	45BB	P220G-I/10940	22.1, 52, 61, 62
B43E-GA016/ 4356	Ingram Kut-Mor	45BT	P220G-I/11255	5, 37, 85
B43E-GA016/ 4369	Lincoln	45BG	P216G-I/10939	84
B43E-GA016/ 4372	ESAB	45BF	N/A	
B43E-GA016/ 4405	Stock	45BB	P220G-I/10940	5
B43E-GA016/ 4418	Lincoln	45BG	P216G-I/10939	84
B43E-GA016/ 4426	Belco Ind	45BB	P220G-I/10940	22.1, 52, 61, 62

**B43G**

B43G-GA018/ 3733	Gravely	45CA	P218G-I/10930	54, 59, 61
B43G-GA018/ 4060	Deere - 318	45BD	P220G-I/10935	5, 6, 49, 62, 73, 83
B43G-GA018/ 4113	Jacobsen	45BB	P220G-I/10931	5, 28, 50, 67
B43G-GA018/ 4135	Deere - 318	45BD	P220G-I/10935	5, 6, 49, 62, 73, 83
B43G-GA018/ 4137	Jacobsen	45BB	P220G-I/10931	5, 28, 50, 67
B43G-GA018/ 4166	New Holland	45BT	P220G-I/11255	5, 50, 62, 73, 79, 83
B43G-GA018/ 4167	Deere - 318	45BD	P220G-I/10935	5, 6, 49, 62, 73, 83
B43G-GA018/ 4173	Deere - 318	45BD	P220G-I/10935	5, 6, 49, 62
B43G-GA018/ 4174	Deere - 318	45BD	P220G-I/10935	5, 6, 49, 62
B43G-GA018/ 4206	Deere	45BD	P220G-I/10935	5, 6, 29, 36, 49, 62, 73
B43G-GA018/ 4219	Tennant	45BB	P220G-I/10940	5, 62, 83
B43G-GA018/ 4234	Deere - 318	45BD	P220G-I/10935	5, 6, 49, 62
B43G-GA018/ 4237	Hobbs Equip	45BB	P220G-I/10940	5, 52
B43G-GA018/ 4262	Stock Engine	45BB	P220G-I/10940	5, 50
B43G-GA018/ 4263	Jacobsen	45BB	P220G-I/10931	5, 28, 50, 62
B43G-GA018/ 4265	Stanby Power	45BB	P220G-I/10940	4, 5, 50, 61, 73
B43G-GA018/ 4272	Base Engine	45BB	P220G-I/10940	5
B43G-GA018/ 4295	Bunton	45BB	P220G-I/10940	5, 22.1, 36, 49
B43G-GA018/ 4327	Deere - 318	45BD	P220G-I/11128	5, 6, 49, 62
B43G-GA018/ 4336	Jacobsen	45BP	P220G-I/10944	25, 28, 32, 37, 40, 56, 64

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>B43M</b>				
B43M-GA016/ 3418	Roper/Sears	45BR	N/A	Transverse mounted engine
3418	Oakes/Gehl	45BR	N/A	No notes
B43M-GA016/ 3419	Case/Ingersoll	45BC	P218G-I/10936	33, 88
B43M-GA016/ 3420	Massey Ferguson	45BB	P220G-I/10940	67, 83, 90, 96
B43M-GA016/ 3422	Gravely	45CA	P218G-I/10930	54, 59, 61
B43M-GA016/ 3433	Hydramaster	45BB	P220G-I/10940	28, 52, 80
B43M-GA016/ 3441	Stock Engine	45BE	P220G-I/10933	52
B43M-GA016/ 3442	Stock Engine	45BE	P220G-I/10933	52, 77
B43M-GA016/ 3507	Stock Engine	45BB	P220G-I/10940	52
B43M-GA016/ 3543	Anderson	45BB	P220G-I/10940	No notes
B43M-GA016/ 3552	Case/Ingersoll	45BC	P218G-I/10936	33, 88
B43M-GA016/ 3570	Anderson	45BB	P220G-I/10940	No notes
B43M-GA016/ 3586	Stock Engine	45BE	P220G-I/10933	4, 52
B43M-GA016/ 3602	Wheelhorse	45BB	P220G-I/10940	83, 96
B43M-GA016/ 3622	Case/Ingersoll	45BC	P218G-I/10936	88 (Single muffler w/ 1.25" ID inlets)
3622	Case/Ingersoll	45BC	P218G-I/10936	89 (Single muffler w/ 1.12" ID inlets)
B43M-GA016/ 3782	Stock Engine	45BB	P220G-I/10940	90
B43M-GA016/ 3798	Flaherty	45BS	P220G-I/11253	4, 52, 77, 85
B43M-GA016/ 3812	AMA	45BE	P220G-I/10933	4, 52
B43M-GA016/ 3840	ESCO	45BS	P220G-I/11253	4, 85, 90
B43M-GA016/ 3842	Oakes/Prm Movr	45BB	P220G-I/10940	No notes
B43M-GA016/ 3896	ESCO	45BS	P220G-I/11253	4, 52, 85
B43M-GA016/ 3902	Case/Burlington	45BB	P220G-I/10940	22.1, 29, 37, 61, 62
B43M-GA016/ 3945	Onan Epd	45BZ	N/A	Crnkshft not serviced with rpl eng
B43M-GA016/ 3956	Case/Burlington	45BB	P220G-I/10940	22.1, 29, 37, 61, 62
B43M-GA016/ 3984	ESCO	45BS	P220G-I/11253	4, 52, 85
B43M-GA016/ 3996	Onan Epd	45BZ	N/A	Crnkshft not serviced with rpl eng
B43M-GA016/ 4029	Case/Davis	45BB	P220G-I/10940	22.1, 37, 50, 61, 62, 73
B43M-GA016/ 4034	HSE	45BE	P220G-I/10933	No notes
B43M-GA016/ 4150	Case/Burlington	45BB	P220G-I/10940	22.1, 29, 37, 61, 62
B43M-GA016/ 4183	Ingersoll	45BC	P218G-I/10936	No notes
B43M-GA016/ 4248		45BE	P220G-I/10933	4, 37, 40, 52, 85
B43M-GA016/ 4250	Midwestern	45BB	P220G-I/10940	1, 29, 37, 73
B43M-GA016/ 4254	Turf Rplcmnt	45BB	P220G-I/10940	33, 96
4254	Rpl - Roper/Sears	45BR	N/A	Transverse mounted engine
4254	Rpl - Case/Ingersoll	45BC	N/A	Tractor with 2 side mntd mufflers
4254	Rpl - Case/Ingersoll	45BC	P218G-I/10936	33, 88 (Single muffler w/ 1.25" ID inlets)
4254	Rpl - Case/Ingersoll	45BC	P218G-I/10936	89 (Single muffler w/ 1.12" ID inlets)
B43M-GA016/ 4289	Case/Burlington	45BB	P220G-I/10940	22.1, 29, 37, 61, 62
B43M-GA016/ 4380	Case/Burlington	45BB	P220G-I/10940	22.1, 29, 37, 61, 62
B43M-GA016/ 4417	Wheelhorse	45BB	P220G-I/10940	21, 73, 96
B43M-GA016/ 4420	Gravely	45CA	P218G-I/10930	54, 59, 61

<sup>1</sup> For PTO stub description, see Appendix A.



ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>B48G</b>				
B48G-GA020/ 1	Base	45BB	P220G-I/10940	5, 16, 47, 67
B48G-GA020/ 3707	Intl Harvester	45BB	P220G-I/11249	5, 10, 27, 50, 51, 80.1
B48G-GA020/ 3713	Roper/Sears	45BB	P220G-I/10940	10, 28, 61
B48G-GA020/ 3738	Gravely	45CA	P218G-I/10930	54, 59, 61
B48G-GA020/ 3800	Stock Engine	45BB	P220G-I/10940	47
B48G-GA020/ 3831	Larsen Ag Spray	45BT	P220G-I/11255	5, 57, 67, 86
B48G-GA020/ 3858	Roper/Sears	45BB	P220G-I/10931	5, 27, 28, 50, 67, 73, 83
B48G-GA020/ 4000	Stock	45BE	P220G-I/10933	5, 50, 67
B48G-GA020/ 4001	Steiner	45BB	P220G-I/10940	5, 57, 67
B48G-GA020/ 4051	Toro	45BJ	P220G-I/10932	5, 50, 67, 80.1
B48G-GA020/ 4061	Deere - 420	45BD	P220G-I/10935	5, 6, 49, 62, 73, 83
B48G-GA020/ 4074	Jacobsen	45BB	P220G-I/10931	5, 28, 37, 50, 67, 80.1
B48G-GA020/ 4085	Olathe	45BB	P220G-I/10940	5, 67
B48G-GA020/ 4136	Deere - 420	45BD	P220G-I/10935	5, 6, 49, 62, 73, 83
B48G-GA020/ 4138	Jacobsen	45BB	P220G-I/10931	5, 28, 37, 50, 67, 80.1
B48G-GA020/ 4139	Toro	45BJ	P220G-I/10932	5, 40, 50, 67, 80.1
B48G-GA020/ 4140	Comet	45BB	P220G-I/10940	5, 67
B48G-GA020/ 4141	Stock Engine	45BE	P220G-I/10933	5, 67, 50
B48G-GA020/ 4142	Larsen Ag Spray	45BT	P220G-I/11255	5, 57, 67, 86
B48G-GA020/ 4143	Roper/Sears	45BB	P220G-I/10931	5, 27, 28, 50, 67, 73, 83
B48G-GA020/ 4144	Steiner	45BB	P220G-I/10940	5, 57, 67
B48G-GA020/ 4145	Toro	45BJ	P220G-I/10932	5, 40, 50, 67, 80.1
B48G-GA020/ 4146	Olathe (Comet)	45BB	P220G-I/10940	5, 67
B48G-GA020/ 4168	Gehl	45BB	P220G-I/10940	5, 28, 37, 40, 52, 67
B48G-GA020/ 4175	Deere - 420	45BD	P220G-I/10935	5, 6, 49, 62
B48G-GA020/ 4176	Hako	45BE	P220G-I/10933	2, 5, 37, 40, 50, 62, 67, 73, 83
B48G-GA020/ 4192	Steiner	45BB	P220G-I/10940	5, 56, 67
B48G-GA020/ 4208	Kut Kwick	45BE	P220G-I/10933	2, 5, 50, 51, 67
B48G-GA020/ 4216	Distragen	45BY	N/A	Crmkshft not serviced with rpl eng
B48G-GA020/ 4218	Stepp Mfg	45BT	P220G-I/11255	3, 5, 50, 67, 85
B48G-GA020/ 4223	Hako	45BE	P220G-I/10933	2, 5, 62, 63, 64, 73, 83
B48G-GA020/ 4224	Fairmont	45BE	P220G-I/10933	3, 5, 28, 57, 67, 83
B48G-GA020/ 4225	Kut Kwick	45BE	P220G-I/10933	2, 5, 36, 50, 67
B48G-GA020/ 4230	Deere - F910	45BD	P220G-I/10935	5, 29, 36, 49, 62, 73
B48G-GA020/ 4231	Harrison	45BT	P220G-I/11255	5, 50, 61, 62, 67, 86
B48G-GA020/ 4235	Deere - 420	45BD	P220G-I/10935	5, 6, 49, 62
B48G-GA020/ 4249	Deere - F910	45BD	P220G-I/10935	5, 29, 36, 49, 62, 73
B48G-GA020/ 4261	Stock Engine	45BE	P220G-I/10933	5, 50, 67
B48G-GA020/ 4262	Stock Engine	45BB	P220G-I/10940	5, 50, 67
B48G-GA020/ 4264	Jacobsen	45BB	P220G-I/10931	5, 28, 37, 50, 67
B48G-GA020/ 4273	Base Engine	45BB	P220G-I/10940	5, 67
B48G-GA020/ 4276	Cub Cadet	45BB	P220G-I/11249	5, 10, 27, 50, 51, 80.1
B48G-GA020/ 4278	Steiner	45BB	P220G-I/10940	5, 22.1, 56, 67
B48G-GA020/ 4283	Furatell	45BT	P220G-I/11255	5, 22.1, 49, 67, 85
B48G-GA020/ 4291	Comet	45BB	P220G-I/10940	5
B48G-GA020/ 4294	Kut Kwick	45BE	P220G-I/10933	2, 5, 37, 50, 67, 73

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
B48G-GA020/ 4296	Midwestern	45BT	P220G-I/11255	5, 57, 67, 86
B48G-GA020/ 4316	Jacobsen	45BP	P220G-I/10944	5, 22.1, 25, 28, 37, 40, 56, 64, 67, 83
B48G-GA020/ 4321	Wood-Mizer	45BB	P220G-I/10940	5, 49, 67
B48G-GA020/ 4325	Comet	45BB	P220G-I/10931	5, 37, 67, 73
B48G-GA020/ 4328	Deere - 420	45BD	P220G-I/11128	5, 6, 49, 62
B48G-GA020/ 4329	Deere - F910	45BE	P220G-I/10933	2, 5, 22.1, 29, 36, 49, 62
B48G-GA020/ 4339	Blalock	45BT	P220G-I/11255	5, 50, 67, 85
B48G-GA020/ 4344	Lincoln (Aust)	45BY	N/A	Crmkshft not serviced with rpl eng
B48G-GA020/ 4346	Steiner	45BB	P220G-I/10940	5, 22.1, 49, 73, 83
B48G-GA020/ 4348	Toro	45BJ	P220G-I/10932	5, 50, 80.1
B48G-GA020/ 4351	Jacobsen	45BB	P220G-I/10931	5, 22.1, 28, 37, 49, 80.1
B48G-GA020/ 4353	Fairmont Rr	45BE	P220G-I/10933	3, 5, 57, 83
B48G-GA020/ 4359	Miller	45BH	P220G-I/10938	86, 92
B48G-GA020/ 4360	Steiner	45BB	P220G-I/10940	5, 22.1, 49, 73, 83
B48G-GA020/ 4365	Lincoln (Aust)	45BY	N/A	Crmkshft not serviced with rpl eng
B48G-GA020/ 4368	Lantis Co	45BB	P220G-I/10940	4, 5, 50
B48G-GA020/ 4370	McDonald	45BB	P220G-I/10940	5, 50, 67
B48G-GA020/ 4374	Hartmat	45BE	P220G-I/10933	5, 50, 67
B48G-GA020/ 4375	Comet	45BB	P220G-I/10931	5, 37, 40, 67, 73
B48G-GA020/ 4378	Furatell	45BT	P220G-I/11255	5, 22.1, 32, 49, 67, 86
B48G-GA020/ 4409	Stock Engine	45BB	P220G-I/10940	5
B48G-GA020/ 4411	Mecelec	45BB	P220G-I/10940	5, 56, 83
B48G-GA020/ 4413	Fairmont Rr	45BE	P220G-I/10933	3, 5, 57, 83
B48G-GA020/ 4430	Stock Engine	45BE	P220G-I/10933	5
B48G-GA020/ 4431	Gravely	45CA	P218G-I/10930	54, 59, 61
B48G-GA020/ 4433	Cub Cadet	45BB	P220G-I/11249	5, 10, 27, 50, 51, 80.1
B48G-GA020/ 4434	Roper/Sears	45BB	P220G-I/10931	5, 27, 50, 73, 83
B48G-GA020/ 4436	Steiner	45BB	P220G-I/10940	5, 22.1, 49, 73, 83
B48G-GA020/ 4445	Jacobsen	45BB	P220G-I/10931	5, 22.1, 37, 50
B48G-GA020/ 4446	Deere - F910	45BE	P220G-I/10933	2, 5, 22.1, 29, 36, 49, 62
B48G-GA020/ 4447	Hako Werke	45BE	P220G-I/10933	2, 5, 62, 63, 64, 73, 83

**B48M**

B48M-GA018/ 3417	Roper/Sears	45BR	N/A	Transverse mounted engine
B48M-GA018/ 3421	Massey Fergsn	45BB	P220G-I/10940	67, 83, 90, 96
B48M-GA018/ 3423	Gravely	45CA	P218G-I/10930	54, 59, 61
B48M-GA018/ 3438	Hydra-Mac	45BB	P220G-I/10940	29, 37, 52, 61, 62, 67, 73, 80
B48M-GA018/ 3443	Stock Engine	45BE	P220G-I/10933	52, 67
B48M-GA018/ 3444	Stock Engine	45BE	P220G-I/10933	52, 67, 77
B48M-GA018/ 3450	E-Z-Go	45BP	P220G-I/10944	3, 28, 32, 67
B48M-GA018/ 3475	Roper/Sears	45BR	N/A	Transverse mounted engine
B48M-GA018/ 3508	Turf Replacement	45BB	P220G-I/10940	67, 90, 96
B48M-GA018/ 3547	Stannard Power	45BB	P220G-I/10940	67, 83, 90
B48M-GA018/ 3548	Dienes	45BB	P220G-I/10940	67, 90
B48M-GA018/ 3560	Roper/Sears	45BR	N/A	Transverse mounted engine
B48M-GA018/ 3588	Stock Engine	45BE	P220G-I/10933	4, 52, 67

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
B48M-GA018/ 3615	ESCO	45BE	P220G-I/10933	4, 52, 67
B48M-GA018/ 3631	Case/Ingersoll	45BC	P218G-I/10936	88 (Single muffler w/ 1.25" ID inlets)
	3631 Case/Ingersoll	45BC	P218G-I/10936	89 (Single muffler w/ 1.12" ID inlets)
B48M-GA018/ 3633	Roper/Sears	45BR	N/A	Transverse mounted engine
B48M-GA018/ 3649	ESCO	45BE	P220G-I/10933	4, 52, 67
B48M-GA018/ 3783	Turf Rplcmnt	45BB	P220G-I/10940	33, 67, 96
	3783 Rpl - Roper/Sears	45BR	N/A	Transverse mounted engine
	3783 Rpl - Case/Ingersoll	45BC	P218G-I/10936	88 (Single muffler w/ 1.25" ID inlets)
	3783 Rpl - Case/Ingersoll	45BC	P218G-I/10936	89 (Single muffler w/ 1.12" ID inlets)
B48M-GA018/ 3799	McEntyre	45BS	P220G-I/11253	52, 67, 83, 85
B48M-GA018/ 3818	Roper/Sears	45BR	N/A	Transverse mounted engine
B48M-GA018/ 3819	Roper/Sears	45BR	N/A	Transverse mounted engine
B48M-GA018/ 4087	Oakes/Prm Movr	45BB	P220G-I/10940	10, 28, 61, 67
B48M-GA018/ 4088	Distragen	45CE	N/A	Cmkshft not serviced with rpl eng
B48M-GA018/ 4107	Miller	45BH	P218G-I/10937	82, 92
B48M-GA018/ 4108	Miller	45BH	N/A	Mag ignit not serviced with rpl eng
B48M-GA018/ 4111	Oakes/Prm Movr	45BT	P220G-I/11255	37, 73, 79
B48M-GA018/ 4153	Standby Power	45BS	P220G-I/11253	4, 52, 67, 77, 85
B48M-GA018/ 4184	Ingersoll	45BC	P218G-I/10936	No notes
B48M-GA018/ 4227	Inland Diesel	45BS	P220G-I/11253	4, 52, 67, 77, 85
B48M-GA018/ 4229	Standby Power	45BS	P220G-I/11253	4, 52, 67, 77, 85
B48M-GA018/ 4236	E-Z-Go	45BP	P220G-I/10944	28, 32, 67
B48M-GA018/ 4238	Prime Mover	45BB	P220G-I/10940	37, 67
B48M-GA018/ 4252	Inland Diesel	45BS	P220G-I/11253	4, 52, 67, 77, 85
B48M-GA018/ 4279	Interstate	45BB	P220G-I/10940	52, 67
B48M-GA018/ 4299	E-Z-Go	45BP	P220G-I/10944	3, 28, 32, 67
B48M-GA018/ 4315	Inland Diesel	45BS	P220G-I/11253	4, 37, 40, 52, 61, 67, 77, 85
B48M-GA018/ 4349	Inland Diesel	45BB	P220G-I/10940	4, 52, 61, 67, 77
B48M-GA018/ 4381	Miller	45BH	P218G-I/10937	82, 92
B48M-GA018/ 4387	E-Z-Go	45BP	P220G-I/10944	3, 28, 37, 40, 67
B48M-GA018/ 4401	E-Z-Go	45BP	P220G-I/10944	3, 28, 37, 40, 67

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>BF</b>				
BF-MS/2270		45BB	P220G-I/10940	90
BF-MS/2271		45BB	P220G-I/10940	90
BF-MS/2290	Gravely	45CA	P218G-I/10930	54, 59
BF-MS/2291	Gravely	45CA	P218G-I/10930	54, 59
BF-MS/2366	Wheelhorse	45BB	P220G-I/10940	83, 90, 96
BF-MS/2367	Lahman Mfg.	45BB	P220G-I/10940	83, 90
BF-MS/2379	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/2425	Bolens	45BB	P220G-I/10940	12, 90, 96
BF-MS/2434	J.I. Case	45BC	N/A	Tractor with 2 side mntd mufflers
BF-MS/2449		45BB	P220G-I/10940	90
BF-MS/2493	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/2666	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/2675	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/2728	Bruce Mfg.	45BB	P220G-I/10940	90
BF-MS/2833	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/2851	Roper/SEars	45BR	N/A	Transverse mounted engine
BF-MS/2891	J.I. Case	45BC	N/A	Tractor with 2 side mntd mufflers
/2891	J.I. Case	45BC	P218G-I/10936	88, 90 (Tractor with single muffler)
BF-MS/2927	Toro Mfg.	45BB	P220G-I/10940	90, 96
BF-MS/2929	Wheelhorse	45BB	P220G-I/10940	21, 83, 90, 96
BF-MS/2938	Bolens	45BB	P220G-I/10940	12, 90, 96
BF-MS/3128	Howard Comm. Turf	45EA	N/A	No Notes
BF-MS/3157	Deines	45BB	P220G-I/10940	90
BF-MS/3177	J.I. Case	45BC	P218G-I/10936	88, 90
BF-MS/3221	Massey Ferguson	45BB	P220G-I/10940	67, 83, 90, 96
BF-MS/3250		45BB	P220G-I/10940	61, 77, 90
BF-MS/3264	J.I. Case	45BC	P218G-I/10936	88, 90
BF-MS/3265	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/3268	Wheelhorse	45BB	P220G-I/10940	21, 90, 96
BF-MS/3271	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/3283	Bolens	45BB	P220G-I/10940	12, 90, 96
BF-MS/3294	Deines	45BB	P220G-I/10940	90
BF-MS/3347	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/3394	Roper/Sears	45BR	N/A	Transverse mounted engine
BF-MS/3398	Bolens	45BB	P220G-I/10940	12, 90, 96
BF-MS/3414	Mark Ind.	45BB	P220G-I/10940	90
BF-MS/3437	Hydramaster	45BB	P220G-I/10940	90
BF-MS/3446		45BE	P220G-I/10933	61, 77, 90

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>BG</b>				
BG-MS/2950	Roper/Sears	45BR	N/A	Transverse mounted engine
BG-MS/2980	Roper/Sears	45BR	N/A	Transverse mounted engine
BG-MS/3158	Deines	45BB	P220G-I/10940	90
BG-MS/3270	Roper/Sears	45BR	N/A	Transverse mounted engine
BG-MS/3272	Roper/Sears	45BR	N/A	Transverse mounted engine
BG-MS/3310	Roper/Sears	45BR	N/A	Transverse mounted engine
BG-MS/3344	Roper/Sears	45BR	N/A	Transverse mounted engine

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>CCK</b>				
CCK-3G/3472	Lewis Stone	1.125 ST	N/A	
CCK-3MG/3167	Mathey Mfg.	1.125 ST	N/A	
CCK-3MG/3341	Mathey Mfg.	1.125 ST	N/A	
CCK-3MG/3731	Kipp Kelly	1.125 ST	N/A	
CCK-3MG/4320	Menge Pump	1.125 ST	N/A	
CCK-4G/7		1.125 ST	N/A	
CCK-4G/452	Mathey Mfg.	1.125 ST	N/A	
CCK-4MG/7	McEntyre	0.985 ST	N/A	
CCK-4MG/454		1.125 ST	N/A	
CCK-4MG/477		1.125 ST	N/A	
CCK-4MG/555		1.125 ST	N/A	
CCK-4MG/577		1.125 ST	N/A	
CCK-4MG/584		1.125 ST	N/A	
CCK-4MG/605		1.125 ST	N/A	
CCK-4MG/650		1.125 ST	N/A	
CCK-4MG/655		1.125 ST	N/A	
CCK-4MG/682		1.125 ST	N/A	
CCK-4MG/1699		1.125 ST	N/A	
CCK-4MG/1886			N/A	
CCK-4MG/2883	Winter Engine	1.125 ST	N/A	
CCK-4MG/3081	McEntyre Bros.	1.125 ST	N/A	
CCK-13MC/117			N/A	
CCK-13MC/121			N/A	
CCK-F/1736		1.500 ST	N/A	
CCK-F/3302	Smith Kirkpatrick	1.500 TP	N/A	
CCK-F/3349	C W Silver	1.500 ST	N/A	
CCK-MF/1542	Stock	1.500 ST	N/A	
CCK-MF/2056		1.500 ST	N/A	
CCK-MF/2208		1.437 ST	N/A	
CCK-MF/3520	L.S.P.	1.500 ST	N/A	
CCK-MF/3549	A F Shane	1.500 ST	N/A	
CCK-MFV/ (ALL)			N/A	Vacu-flo cooling
CCK-MS/1	Master	1.500 ST	N/A	
CCK-MS/28	Blalock	1.500 ST	N/A	
CCK-MS/312		1.500 ST	N/A	
CCK-MS/393	McEntyre	1.500 ST	N/A	
CCK-MS/410		1.500 ST	N/A	
CCK-MS/428		1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCK-MS/463		1.625 TP	N/A	
CCK-MS/517		1.500 ST	N/A	
CCK-MS/530		1.500 ST	N/A	
CCK-MS/556		1.625 TP	N/A	
CCK-MS/565		1.500 ST	N/A	
CCK-MS/568		1.500 ST	N/A	
CCK-MS/606			N/A	
CCK-MS/610		1.625 TP	N/A	
CCK-MS/619		1.500 ST	N/A	
CCK-MS/628		1.500 ST	N/A	
CCK-MS/629		1.125 ST	N/A	
CCK-MS/634			N/A	
CCK-MS/635		1.125 ST	N/A	
CCK-MS/637		1.500 ST	N/A	
CCK-MS/651		1.500 ST	N/A	
CCK-MS/662			N/A	
CCK-MS/663			N/A	
CCK-MS/674		1.250 ST	N/A	
CCK-MS/675		1.500 ST	N/A	
CCK-MS/693		1.500 ST	N/A	
CCK-MS/695	Miller	1.625 TP	N/A	
CCK-MS/696		1.500 ST	N/A	
CCK-MS/698		1.500 ST	N/A	
CCK-MS/707		1.500 ST	N/A	
CCK-MS/730		1.500 ST	N/A	
CCK-MS/734			N/A	
CCK-MS/736	Miller	1.625 TP	N/A	
CCK-MS/747		1.500 ST	N/A	
CCK-MS/775		1.500 ST	N/A	
CCK-MS/777		1.125 ST	N/A	
CCK-MS/778		1.500 ST	N/A	
CCK-MS/780		1.500 ST	N/A	
CCK-MS/818		1.500 ST	N/A	
CCK-MS/831		1.500 ST	N/A	
CCK-MS/842		1.625 ST	N/A	
CCK-MS/847		1.125 ST	N/A	
CCK-MS/850		1.500 TP	N/A	
CCK-MS/851		1.500 ST	N/A	
CCK-MS/865		1.125 ST	N/A	
CCK-MS/867		Threaded	N/A	
CCK-MS/915		1.500 ST	N/A	
CCK-MS/928		1.500 ST	N/A	
CCK-MS/931		1.500 ST	N/A	
CCK-MS/963	Thermo King	1.625 TP	N/A	
CCK-MS/1047		1.500 TP	N/A	
CCK-MS/1070		1.500 ST	N/A	
CCK-MS/1091	Thermo King	1.625 TP	N/A	
CCK-MS/1095	Thermo King	1.625 TP	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCK-MS/1096	Thermo King	1.625 TP	N/A	
CCK-MS/1097		1.500 ST	N/A	
CCK-MS/1106	Miller	1.625 TP	N/A	
CCK-MS/1108		1.500 ST	N/A	
CCK-MS/1121			N/A	
CCK-MS/1123		1.437 ST	N/A	
CCK-MS/1167		1.125 ST	N/A	
CCK-MS/1174			N/A	
CCK-MS/1181		1.125 ST	N/A	
CCK-MS/1187			N/A	
CCK-MS/1196	Miller	1.625 TP	N/A	
CCK-MS/1198		1.500 ST	N/A	
CCK-MS/1202		1.500 ST	N/A	
CCK-MS/1204		1.500 ST	N/A	
CCK-MS/1212	Stock	1.500 ST	N/A	
CCK-MS/1216		1.625 TP	N/A	
CCK-MS/1221		1.500 ST	N/A	
CCK-MS/1233		1.625 TP	N/A	
CCK-MS/1235			N/A	
CCK-MS/1236		1.125 ST	N/A	
CCK-MS/1240		1.625 TP	N/A	
CCK-MS/1241	Thermo King	1.625 TP	N/A	
CCK-MS/1243		1.125 ST	N/A	
CCK-MS/1244		1.500 ST	N/A	
CCK-MS/1247	Wayne	1.125 ST	N/A	
CCK-MS/1250			N/A	
CCK-MS/1251		1.500 ST	N/A	
CCK-MS/1254	Thermo King	1.625 TP	N/A	
CCK-MS/1256			N/A	
CCK-MS/1260			N/A	
CCK-MS/1266		1.500 ST	N/A	
CCK-MS/1268		1.500 ST	N/A	
CCK-MS/1286		1.500 ST	N/A	
CCK-MS/1315		1.625 TP	N/A	
CCK-MS/1324		1.500 ST	N/A	
CCK-MS/1329		1.500 ST	N/A	
CCK-MS/1338	Thermo King	1.500 ST	N/A	
CCK-MS/1352			N/A	
CCK-MS/1377		1.625 TP	N/A	
CCK-MS/1378		1.625 TP	N/A	
CCK-MS/1379		1.500 ST	N/A	
CCK-MS/1380		1.500 ST	N/A	
CCK-MS/1381		1.500 ST	N/A	
CCK-MS/1382		1.500 ST	N/A	
CCK-MS/1388		1.625 TP	N/A	
CCK-MS/1395	Westcoaster	1.500 ST	N/A	
CCK-MS/1396			N/A	
CCK-MS/1400			N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.



ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCK-MS/1404		1.500 ST	N/A	
CCK-MS/1420		1.500 ST	N/A	
CCK-MS/1450	Melroe	1.500 ST	N/A	
CCK-MS/1451		1.500 ST	N/A	
CCK-MS/1456		1.500 ST	N/A	
CCK-MS/1458		1.500 ST	N/A	
CCK-MS/1461		1.500 ST	N/A	
CCK-MS/1464			N/A	
CCK-MS/1475		1.500 ST	N/A	
CCK-MS/1483		1.500 ST	N/A	
CCK-MS/1487		1.500 ST	N/A	
CCK-MS/1500		1.500 ST	N/A	
CCK-MS/1522		1.500 ST	N/A	
CCK-MS/1532		1.500 ST	N/A	
CCK-MS/1548	Namco	1.500 ST	N/A	
CCK-MS/1552		1.500 ST	N/A	
CCK-MS/1573		1.500 ST	N/A	
CCK-MS/1578		1.500 ST	N/A	
CCK-MS/1594			N/A	
CCK-MS/1610		1.500 ST	N/A	
CCK-MS/1674		1.500 ST	N/A	
CCK-MS/1689			N/A	
CCK-MS/1737		1.500 ST	N/A	
CCK-MS/1745		1.625 TP	N/A	
CCK-MS/1778			N/A	
CCK-MS/1799		1.500 ST	N/A	
CCK-MS/1833		1.500 ST	N/A	
CCK-MS/1864	Cal West	1.500 ST	N/A	
CCK-MS/1871	Namco	1.500 ST	N/A	
CCK-MS/1872	Namco	1.500 ST	N/A	
CCK-MS/1879	Thermo King	1.625 TP	N/A	
CCK-MS/1881			N/A	
CCK-MS/1903		1.500 ST	N/A	
CCK-MS/1985	Equipment Sales	1.500 ST	N/A	
CCK-MS/2031	Namco	1.500 ST	N/A	
CCK-MS/2032	Namco	1.500 ST	N/A	
CCK-MS/2083		1.500 ST	N/A	
CCK-MS/2085			N/A	
CCK-MS/2126	U.S. Army TSC	1.500 ST	N/A	
CCK-MS/2151		1.500 ST	N/A	
CCK-MS/2158			N/A	
CCK-MS/2171	Thermo King	1.625 TP	N/A	
CCK-MS/2217	Wliikel	1.500 ST	N/A	
CCK-MS/2235			N/A	
CCK-MS/2236			N/A	
CCK-MS/2240		1.500 ST	N/A	
CCK-MS/2261			N/A	
CCK-MS/2270	Menge	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCK-MS/2289		1.625 TP	N/A	
CCK-MS/2313	Electrical Const.	1.500 ST	N/A	
CCK-MS/2326	Namco	1.500 ST	N/A	
CCK-MS/2327	Namco	1.500 ST	N/A	
CCK-MS/2348			N/A	
CCK-MS/2378			N/A	
CCK-MS/2446		1.500 ST	N/A	
CCK-MS/2485		1.500 ST	N/A	
CCK-MS/2504		1.125 ST	N/A	
CCK-MS/2508	Namco	1.500 ST	N/A	
CCK-MS/2509	Namco	1.500 ST	N/A	Vacu-flo cooling
CCK-MS/2593	Thermo King	1.625 TP	N/A	
CCK-MS/2667			N/A	
CCK-MS/2677	Miller	1.500 ST	N/A	
CCK-MS/2716	Blalock	1.500 ST	N/A	
CCK-MS/2734	Namco	1.500 ST	N/A	Vacu-flo cooling
CCK-MS/2735	Namco	1.500 ST	N/A	Vacu-flo cooling
CCK-MS/2736			N/A	
CCK-MS/2740	C & M Power	1.625 TP	N/A	
CCK-MS/2741		1.500 ST	N/A	
CCK-MS/2743		1.500 ST	N/A	
CCK-MS/2747	Thermo King	1.500 ST	N/A	
CCK-MS/2752	Thermo King	1.625 TP	N/A	
CCK-MS/2755	Thermo King	1.625 TP	N/A	
CCK-MS/2756	Thermo King	1.625 TP	N/A	
CCK-MS/2760	Grove Crane	1.500 ST	N/A	
CCK-MS/2763	McEntyre Inc.	1.500 ST	N/A	
CCK-MS/2767	Thermo King	1.625 TP	N/A	
CCK-MS/2774	Thermo King	1.625 TP	N/A	
CCK-MS/2779	Thermo King	1.625 TP	N/A	
CCK-MS/2785	Thermo King	1.625 TP	N/A	
CCK-MS/2787	Thermo King	1.625 TP	N/A	
CCK-MS/2788	Thermo King	1.625 TP	N/A	
CCK-MS/2789	Thermo King	1.625 TP	N/A	
CCK-MS/2799	Meco	1.500 ST	N/A	
CCK-MS/2804	Thermo King	1.625 TP	N/A	
CCK-MS/2808	Thermo King	1.625 TP	N/A	
CCK-MS/2817	Thermo King	1.625 TP	N/A	
CCK-MS/2821		1.625 TP	N/A	
CCK-MS/2822	Conco Inc.	1.500 ST	N/A	
CCK-MS/2857	Thermo King	1.625 TP	N/A	
CCK-MS/2866	Melroe	1.500 ST	N/A	
CCK-MS/2883	Winter Engine	1.500 ST	N/A	
CCK-MS/2890	C.S.C.	1.500 ST	N/A	
CCK-MS/2893	Thermo King	1.625 TP	N/A	
CCK-MS/2925	Clymar	1.500 ST	N/A	
CCK-MS/2932	Cal West	1.500 ST	N/A	
CCK-MS/2964		1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCK-MS/2967	C.S.C.	1.500 ST	N/A	
CCK-MS/2988	C.S.C.	1.500 ST	N/A	
CCK-MS/3010		1.000 ST	N/A	
CCK-MS/3039	Ekstroms	1.500 ST	N/A	
CCK-MS/3114	C.S.C.	1.500 ST	N/A	
CCK-MS/3166		1.625 TP	N/A	
CCK-MS/3182	Thermo King	1.625 TP	N/A	
CCK-MS/3183	Thermo King	1.625 TP	N/A	
CCK-MS/3187	Diem	1.500 ST	N/A	
CCK-MS/3211	McEntyre	1.500 ST	N/A	
CCK-MS/3216	G.L.T.	1.500 ST	N/A	
CCK-MS/3226	Burlec	1.500 ST	N/A	
CCK-MS/3229	Thermo King	1.625 TP	N/A	
CCK-MS/3242	Ronco	1.500 ST	N/A	
CCK-MS/3259	Burlec	1.500 ST	N/A	
CCK-MS/3291	ESCO	1.625 TP	N/A	
CCK-MS/3304	Land Und Marine	1.500 ST	N/A	
CCK-MS/3312	Svc. Auto. Whse.	1.500 ST	N/A	
CCK-MS/3325	Inst of Tositsa	1.500 ST	N/A	
CCK-MS/3339	Thermo King	1.625 TP	N/A	
CCK-MS/3342	Forces	1.500 ST	N/A	
CCK-MS/3343	Electrical Const.	1.500 ST	N/A	
CCK-MS/3354	Ronco	1.500 ST	N/A	
CCK-MS/3397	Menge	1.500 ST	N/A	
CCK-MS/3462	Electrical Const.	1.500 ST	N/A	
CCK-MS/3496	Trident	1.625 TP	N/A	
CCK-MS/3505	ESCO	1.500 ST	N/A	
CCK-MS/3506	Blalock	1.500 ST	N/A	
CCK-MS/3514	Mecelec	1.500 ST	N/A	
CCK-MS/3517	Ronco	1.500 ST	N/A	
CCK-MS/3525	Thermo King	1.625 TP	N/A	
CCK-MS/3526	ESCO	1.500 ST	N/A	
CCK-MS/3535			N/A	
CCK-MS/3546	Gen Power	1.500 ST	N/A	
CCK-MS/3657	Thermo King	1.625 TP	N/A	
CCK-MS/3699	Ronco	1.500 ST	N/A	
CCK-MS/3719	Thermo King	1.625 TP	N/A	
CCK-MS/3720	Thermo King	1.500 ST	N/A	
CCK-MS/3721	Thermo King	1.625 TP	N/A	
CCK-MS/3722	Thermo King	1.625 TP	N/A	
CCK-MS/3740		1.500 ST	N/A	
CCK-MS/3745	Ronco	1.500 ST	N/A	
CCK-MS/3753	Harrison	1.500 ST	N/A	
CCK-MS/3770	Trident	1.500 ST	N/A	
CCK-MS/3791	Ronco	1.500 ST	N/A	
CCK-MS/3838	Blalock	1.500 ST	N/A	
CCK-MS/3852	Mgr Equip Corp	1.500 ST	N/A	
CCK-MS/3854	Stock	1.437 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCK-MS/3885	Trident	1.500 ST	N/A	
CCK-MS/3922	Blalock	13T/SAE	N/A	
CCK-MS/3949	Westerbeke	1.500 ST	N/A	
CCK-MS/3995		1.500 ST	N/A	
CCK-MS/4011	Thermo King	1.500 ST	N/A	
CCK-MS/4067	Cal West	1.500 ST	N/A	
CCK-MS/4280		1.500 ST	N/A	
CCK-MS/4397	Melroe	1.500 ST	N/A	
CCK-MSV/ (ALL)			N/A	Vacu-flo cooling
CCK-S/1		1.500 ST	N/A	
CCK-S/27	Anderson	1.500 ST	N/A	
CCK-S/28	ESCO	1.500 ST	N/A	
CCK-S/29	C & J	1.500 ST	N/A	
CCK-S/259	Miller	1.625 TP	N/A	
CCK-S/364			N/A	
CCK-S/397	Miller	1.625 TP	N/A	
CCK-S/422	Miller	1.625 TP	N/A	
CCK-S/435	Miller	1.625 TP	N/A	
CCK-S/435		1.625 TP	N/A	
CCK-S/475			N/A	
CCK-S/509		1.500 ST	N/A	
CCK-S/531			N/A	
CCK-S/538			N/A	
CCK-S/652		1.500 ST	N/A	
CCK-S/653		1.500 ST	N/A	
CCK-S/694	Miller	1.625 TP	N/A	
CCK-S/697		1.625 TP	N/A	
CCK-S/725		1.500 ST	N/A	
CCK-S/735	Miller	1.625 TP	N/A	
CCK-S/797	Lincoln	1.625 TP	N/A	
CCK-S/816			N/A	
CCK-S/849			N/A	
CCK-S/883		1.500 ST	N/A	
CCK-S/912			N/A	
CCK-S/1107	Miller	1.625 TP	N/A	
CCK-S/1117			N/A	
CCK-S/1135	Gorman Rupp	1.500 ST	N/A	
CCK-S/1195	Miller	1.625 TP	N/A	
CCK-S/1230			N/A	
CCK-S/1237			N/A	
CCK-S/1246	Lightbourn	1.500 ST	N/A	
CCK-S/1259		1.500 ST	N/A	
CCK-S/1319		1.250 ST	N/A	
CCK-S/1470	Distragen	1.625 TP	N/A	
CCK-S/1570	Lincoln	1.625 TP	N/A	
CCK-S/1627		1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCK-S/1769	AKSA	1.625 TP	N/A	
CCK-S/1776		1.625 TP	N/A	
CCK-S/1982			N/A	
CCK-S/2583	Lincoln	1.625 TP	N/A	
CCK-S/2738	Quatar Petroleum	1.500 ST	N/A	
CCK-S/2806	Harrison	1.500 ST	N/A	
CCK-S/2894	Wales Metal Prod	1.500 ST	N/A	
CCK-S/3337	Meco	1.500 ST	N/A	
CCK-S/3579	AKSA	1.625 TP	N/A	
CCK-S/4008	Mathey Machine	0.985 ST	N/A	
CCK-S/4092	Meco	1.625 TP	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>CCKA</b>				
CCKA-3G/3201	Harrison	0.985 ST	N/A	
CCKA-3MG/3189	McEntyre	0.985 ST	N/A	
CCKA-3MG/3202	Harrison	0.985 ST	N/A	
CCKA-3MG/3358	McEntyre	0.985 ST	N/A	
CCKA-3MG/3483	A.F.Shane	0.985 ST	N/A	
CCKA-3MG/3739	Tuller	0.985 ST	N/A	
CCKA-3MG/4005	Mecelec	0.985 ST	N/A	
CCKA-4MG/7	McEntyre Bros.	1.500 ST	N/A	
CCKA-F/1736	_____	1.500 ST	N/A	
CCKA-MF/1530	_____	1.500 ST	N/A	
CCKA-MF/1824	_____	1.500 ST	N/A	
CCKA-MF/1924	_____	_____	N/A	
CCKA-MF/2773	Sidericaudis	1.500 ST	N/A	
CCKA-MF/2921	Harrison	1.500 ST	N/A	
CCKA-MF/3165	Simson Maxwell	1.500 ST	N/A	
CCKA-MF/3173	Flaherty	1.500 ST	N/A	
CCKA-MF/3359	Electric Const.	1.500 ST	N/A	
CCKA-MF/3367	_____	_____	N/A	
CCKA-MF/3385	Owsley	1.437 ST	N/A	
CCKA-MF/3667	Tuller	1.437 ST	N/A	
CCKA-MF/3717	AKSA	1.500 ST	N/A	
CCKA-MF/3771	Tuller	1.500 ST	N/A	
CCKA-MF/3805	Enerpac	1.500 ST	N/A	
CCKA-MF/3927	Enerpac	1.500 ST	N/A	
CCKA-MF/4003	Tuller	1.625 TP	N/A	
CCKA-MS/1	_____	1.500 ST	N/A	
CCKA-MS/1091	_____	_____	N/A	
CCKA-MS/1274	_____	_____	N/A	
CCKA-MS/1308	_____	1.500 ST	N/A	
CCKA-MS/1381	_____	1.500 ST	N/A	
CCKA-MS/1400	_____	_____	N/A	
CCKA-MS/1522	_____	1.500 ST	N/A	
CCKA-MS/1552	_____	1.500 ST	N/A	
CCKA-MS/1578	_____	1.500 ST	N/A	
CCKA-MS/1610	_____	1.500 ST	N/A	
CCKA-MS/1637	_____	1.500 ST	N/A	
CCKA-MS/1698	_____	1.500 ST	N/A	
CCKA-MS/1715	_____	1.000 ST	N/A	
CCKA-MS/1717	_____	1.500 ST	N/A	
CCKA-MS/1736	_____	_____	N/A	
CCKA-MS/1738	_____	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKA-MS/1766			N/A	
CCKA-MS/1772		1.500 ST	N/A	
CCKA-MS/1773		1.500 ST	N/A	
CCKA-MS/1814		1.500 ST	N/A	
CCKA-MS/1815		1.000 ST	N/A	
CCKA-MS/1816		1.000 ST	N/A	
CCKA-MS/1828		1.500 ST	N/A	
CCKA-MS/1831	Gravely	.875/.748	N/A	
CCKA-MS/1880		1.500 ST	N/A	
CCKA-MS/1897		.875/.748	N/A	
CCKA-MS/1905			N/A	
CCKA-MS/1906			N/A	
CCKA-MS/1912			N/A	
CCKA-MS/1913		1.000 ST	N/A	
CCKA-MS/1927			N/A	
CCKA-MS/1946		1.500 ST	N/A	
CCKA-MS/1949		.875/.748	N/A	
CCKA-MS/1954		1.500 ST	N/A	
CCKA-MS/1991		1.500 ST	N/A	
CCKA-MS/2022		1.000 ST	N/A	
CCKA-MS/2023		1.000 ST	N/A	
CCKA-MS/2026	Simplicity	1.437 ST	N/A	
CCKA-MS/2030	Nickel	1.000 ST	N/A	
CCKA-MS/2043	G.L.T.	.875/.748	N/A	
CCKA-MS/2049			N/A	
CCKA-MS/2052	Miller	1.625 TP	N/A	
CCKA-MS/2085		1.500 ST	N/A	
CCKA-MS/2090			N/A	
CCKA-MS/2094			N/A	
CCKA-MS/2111	Gravely	1.125 ST	P218G-I/10930	54, 59, 101
CCKA-MS/2117	Miller	1.625 ST	N/A	
CCKA-MS/2123		1.500 ST	N/A	
CCKA-MS/2140			N/A	
CCKA-MS/2158			N/A	
CCKA-MS/2159		1.625 ST	N/A	
CCKA-MS/2165	G.L.T.	.875/.748	N/A	
CCKA-MS/2220	Miller	1.625 TP	N/A	
CCKA-MS/2222	J.I. Case	1.437 ST	N/A	
CCKA-MS/2229		1.500 ST	N/A	
CCKA-MS/2237	Miller	1.625 TP	N/A	
CCKA-MS/2240			N/A	
CCKA-MS/2244		9T/SPLIN	N/A	
CCKA-MS/2260		1.625 ST	N/A	
CCKA-MS/2265			N/A	
CCKA-MS/2270	Sidericoudis	1.500 ST	N/A	
CCKA-MS/2299	Miller	1.625 TP	N/A	
CCKA-MS/2313	Land Und Marine	1.500 ST	N/A	
CCKA-MS/2316			N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKA-MS/2335		1.500 ST	N/A	
CCKA-MS/2357		1.500 ST	N/A	
CCKA-MS/2426		1.625 ST	N/A	
CCKA-MS/2432	Material Movem't.	1.000 ST	N/A	
CCKA-MS/2437	Material Movem't.	1.000 ST	N/A	
CCKA-MS/2481	J.I. Case	1.437 ST	N/A	
CCKA-MS/2504		1.125 ST	N/A	
CCKA-MS/2506		1.625 ST	N/A	
CCKA-MS/2507	West Coast Mchy.	1.625 ST	N/A	
CCKA-MS/2523		1.500 ST	N/A	
CCKA-MS/2550		1.500 ST	N/A	
CCKA-MS/2560		1.500 ST	N/A	
CCKA-MS/2561		1.500 ST	N/A	
CCKA-MS/2567	Gravely	1.125 ST	P218G-I/10930	54, 59, 101
CCKA-MS/2603		1.500 ST	N/A	
CCKA-MS/2629	Airco Welder	1.500 ST	N/A	
CCKA-MS/2677		1.625 TP	N/A	
CCKA-MS/2678		1.625 ST	N/A	
CCKA-MS/2694		1.500 ST	N/A	
CCKA-MS/2714			N/A	
CCKA-MS/2741	Winter Engine	1.500 ST	N/A	
CCKA-MS/2743	Wikel Mfg Co	1.500 ST	N/A	
CCKA-MS/2748	Miller	1.625 TP	N/A	
CCKA-MS/2750	Stock	1.500 ST	N/A	
CCKA-MS/2751	Stock	1.500 ST	N/A	
CCKA-MS/2754	Material Movem't	1.000 ST	N/A	
CCKA-MS/2757	Material Movem't	1.000 ST	N/A	
CCKA-MS/2762	Hunt Pierce	1.500 ST	N/A	
CCKA-MS/2769		1.625 TP	N/A	
CCKA-MS/2772	Sidericaudis	1.500 ST	N/A	
CCKA-MS/2778	Miller	1.625 TP	N/A	
CCKA-MS/2781	Lightbourn	1.500 ST	N/A	
CCKA-MS/2783	Meco	1.500 ST	N/A	
CCKA-MS/2790	F.A.S.	1.500 ST	N/A	
CCKA-MS/2802	Otis Material	1.625 ST	N/A	
CCKA-MS/2803	J. I. Case	1.437 ST	N/A	
CCKA-MS/2813	Gravely	1.125 ST	P218G-I/10930	54, 59, 101
CCKA-MS/2818	Scott Ind.	1.500 ST	N/A	
CCKA-MS/2826	Distragen	1.500 ST	N/A	
CCKA-MS/2868	Wiedert Mfg	1.500 ST	N/A	
CCKA-MS/2869	Wiedert Mfg	1.500 ST	N/A	
CCKA-MS/2881	Pezetel	1.500 ST	N/A	
CCKA-MS/2885	Mark Ind.	1.500 ST	N/A	
CCKA-MS/2910	Winter Engine	1.500 ST	N/A	
CCKA-MS/2939	AKSA	1.625 TP	N/A	
CCKA-MS/2942	Distragen	1.500 ST	N/A	
CCKA-MS/2944	Selmec	1.500 ST	N/A	
CCKA-MS/2956	J. C. Schultz	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.



ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKA-MS/2966	Carroll Stuart	1.500 ST	N/A	
CCKA-MS/2982	Otis Material	1.625 ST	N/A	
CCKA-MS/3004	Material Movm't	1.000 ST	N/A	
CCKA-MS/3007	ESCO	1.500 ST	N/A	
CCKA-MS/3010	Material Movm't	1.000 ST	N/A	
CCKA-MS/3017	Selmec	1.500 ST	N/A	
CCKA-MS/3023	Mark Ind.	1.500 ST	N/A	
CCKA-MS/3027	Mecano	1.625 TP	N/A	
CCKA-MS/3036	Union Carbide	1.500 ST	N/A	
CCKA-MS/3037	Menge	1.500 ST	N/A	
CCKA-MS/3043	Distragen	1.500 ST	N/A	
CCKA-MS/3044	Distragen	1.500 ST	N/A	
CCKA-MS/3047	Scott Ind.	1.500 ST	N/A	
CCKA-MS/3050	Distragen	1.500 ST	N/A	
CCKA-MS/3060	Sim Holland	1.500 ST	N/A	
CCKA-MS/3090	Flaherty	1.500 ST	N/A	
CCKA-MS/3096	Scott Ind.	1.500 ST	N/A	
CCKA-MS/3106	Lincoln	1.625 TP	N/A	
CCKA-MS/3108	ESCO	13T/SAE	N/A	
CCKA-MS/3110	Gravely	1.125 ST	P218G-I/10930	54, 59, 101
CCKA-MS/3119	R. B. Grove	1.500 ST	N/A	
CCKA-MS/3133		1.437 ST	N/A	
CCKA-MS/3148	C. S. C.	1.625 TP	N/A	
CCKA-MS/3149		1.125 ST	N/A	
CCKA-MS/3175	Distragen	1.500 ST	N/A	
CCKA-MS/3176		1.625 TP	N/A	
CCKA-MS/3197	Scott Ind.	1.500 ST	N/A	
CCKA-MS/3200	Gen. Unlimited	1.500 ST	N/A	
CCKA-MS/3255	Land Und Marine	1.500 ST	N/A	
CCKA-MS/3275	American Ar/Fitr	1.500 ST	N/A	
CCKA-MS/3277	Meco	1.500 ST	N/A	
CCKA-MS/3311	G.L.T.	1.500 ST	N/A	
CCKA-MS/3317	C.S.C.	1.625 TP	N/A	
CCKA-MS/3330	Land Und Marine	1.500 ST	N/A	
CCKA-MS/3345	Stock	1.437 ST	N/A	
CCKA-MS/3350	Stock	1.437 ST	N/A	
CCKA-MS/3366		1.437 ST	N/A	
CCKA-MS/3370	Forces	1.500 ST	N/A	
CCKA-MS/3373	Distragen	1.500 ST	N/A	
CCKA-MS/3380	Cal West	1.500 ST	N/A	
CCKA-MS/3389	Forces	1.500 ST	N/A	
CCKA-MS/3407	Diem	1.500 ST	N/A	
CCKA-MS/3426	Lightbourn	1.500 ST	N/A	
CCKA-MS/3451	Heck	1.437 ST	N/A	
CCKA-MS/3459	AKSA	1.625 TP	N/A	
CCKA-MS/3460	Selmec	1.500 ST	N/A	
CCKA-MS/3465	Lightbourn	1.500 ST	N/A	
CCKA-MS/3467	R.B. Grove	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKA-MS/3480	C.S.C.	1.500 ST	N/A	
CCKA-MS/3490	C.S.C.	1.500 ST	N/A	
CCKA-MS/3491	Desert	1.500 ST	N/A	
CCKA-MS/3499	A.M.A.	1.500 ST	N/A	
CCKA-MS/3506	Blalock	1.500 ST	N/A	
CCKA-MS/3509	C.S.C.	1.625 TP	N/A	
CCKA-MS/3523	Diem	1.500 ST	N/A	
CCKA-MS/3550	Meco	1.500 ST	N/A	
CCKA-MS/3556	C.S.C.	1.500 ST	N/A	
CCKA-MS/3562	Power Plant	1.500 ST	N/A	
CCKA-MS/3566	J. I. Case	1.437 ST	N/A	
CCKA-MS/3576	G.L.T.	.875/.748	N/A	
CCKA-MS/3612	Gravely	1.125 ST	P218G-I/10930	54, 59, 101
CCKA-MS/3628	McEntyre	1.500 ST	N/A	
CCKA-MS/3639	Mark Ind	1.500 ST	N/A	
CCKA-MS/3640	G.L.T.	1.125 ST	N/A	
CCKA-MS/3666		1.437 ST	N/A	
CCKA-MS/3667			N/A	
CCKA-MS/3670	Meco	1.625 TP	N/A	
CCKA-MS/3671		1.625 TP	N/A	
CCKA-MS/3687	Distragen	1.500 ST	N/A	
CCKA-MS/3692	C.S.C.	1.500 ST	N/A	
CCKA-MS/3718	Meco	1.625 TP	N/A	
CCKA-MS/3741	Paxton	1.500 ST	N/A	
CCKA-MS/3742	Keco	1.500 ST	N/A	
CCKA-MS/3749	Lightbourn	1.500 ST	N/A	
CCKA-MS/3751	A.M.A.	1.500 ST	N/A	
CCKA-MS/3757	Grove Crane (Winter)	1.500 ST	N/A	
CCKA-MS/3758	Grove Crane (Winter)	1.500 ST	N/A	
CCKA-MS/3763	C.S.C.	1.500 ST	N/A	
CCKA-MS/3777	Winter Engine	1.500 ST	N/A	
CCKA-MS/3781	AKSA	1.625 TP	N/A	
CCKA-MS/3805	Clymar	1.500 ST	N/A	
CCKA-MS/3834	Keco	1.500 ST	N/A	
CCKA-MS/3835	R.B. Grove	1.500 ST	N/A	
CCKA-MS/3848	Meco	1.625 TP	N/A	
CCKA-MS/3853	A.M.A.	1.500 ST	N/A	
CCKA-MS/3862	Fremont	9T/SAEA	N/A	
CCKA-MS/3876	Tuller	1.500 ST	N/A	
CCKA-MS/3877	Fremont	1.500 ST	N/A	
CCKA-MS/3908	Tuller	1.500 ST	N/A	
CCKA-MS/3940	A.M.A.	1.500 ST	N/A	
CCKA-MS/3963	CSC	1.500 ST	N/A	
CCKA-MS/3975	Distragen	1.500 ST	N/A	
CCKA-MS/3983	Suetrak	1.625 TP	N/A	
CCKA-MS/3987	Menge	1.437 ST	N/A	
CCKA-MS/4069	Simson Maxwell	1.625 ST	N/A	
CCKA-MS/4090	Avikor Ltd.	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKA-MS/4161	Simson Maxwell	1.500 ST	N/A	
CCKA-MS/4188	Stannard Power	1.500 ST	N/A	
CCKA-MS/4244	DCSC	1.500 ST	N/A	
CCKA-MS/4319	Kelly AFB-USAF	1.500 ST	N/A	
CCKA-MS/4341	Meco	1.500 ST	N/A	
CCKA-MS/4379	Miller	1.625 TP	N/A	
CCKA-MSV/ (ALL)			N/A	Vacu-flo cooling
CCKA-S/28	Selmec	1.500 ST	N/A	
CCKA-S/1627	Lincoln	1.625 TP	N/A	
CCKA-S/1820		1.250 ST	N/A	
CCKA-S/2103	Miller	1.625 TP	N/A	
CCKA-S/2583	Lincoln	1.625 TP	N/A	
CCKA-S/2597	Lincoln	1.625 TP	N/A	
CCKA-S/2737	Lincoln	1.625 TP	N/A	
CCKA-S/2744	Lincoln	1.625 TP	N/A	
CCKA-S/2769	Miller	1.625 TP	N/A	
CCKA-S/2824	Distragen	1.625 TP	N/A	
CCKA-S/2832	Distragen	1.500 ST	N/A	
CCKA-S/2976	Lincoln	1.625 TP	N/A	
CCKA-S/3065	Distragen	1.500 ST	N/A	
CCKA-S/3166	Lincoln	1.625 TP	N/A	
CCKA-S/3176	Distragen	1.625 TP	N/A	
CCKA-S/3263	Distragen	1.625 TP	N/A	
CCKA-S/3322	Miller	1.625 TP	N/A	
CCKA-S/3372	Distragen	1.625 TP	N/A	
CCKA-S/3512	Distragen	1.500 ST	N/A	
CCKA-S/3522	Lincoln	1.625 TP	N/A	
CCKA-S/3671	Miller	1.625 TP	N/A	
CCKA-S/3729	AKSA	1.625 TP	N/A	
CCKA-S/3846	Distragen	1.625 TP	N/A	
CCKA-S/3871	Miller	1.625 TP	N/A	
CCKA-S/4062	Harrison	1.125 ST	N/A	
CCKA-S/4357	Bell & Orders	1.625 TP	N/A	
CCKA-S/4435	Cal-West	1.625 TP	N/A	
CCKA-S/4486	Liquid Arc Pty Ltd	1.625 TP	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>CCKB</b>				
CCKB-MF/352	Forces	1.500 ST	N/A	
CCKB-MF/1455	Fairmont Railway	1.625 TP	N/A	
CCKB-MF/1587	Terrazzo Machine	1.500 ST	N/A	
CCKB-MF/1642	E-Z-Go	1.500 ST	N/A	
CCKB-MF/1802	Weston Bodies	1.500 ST	N/A	
CCKB-MF/1812	Harrison Equipment	1.500 ST	N/A	
CCKB-MF/1869	E-Z-Go	1.500 ST	N/A	
CCKB-MF/2324			N/A	
CCKB-MF/2746	Fairmont Railway	1.625 TP	N/A	
CCKB-MF/2765	J A Faguy		N/A	
CCKB-MF/2863	Polaris (E-Z Go)	1.500 ST	N/A	
CCKB-MF/2921		1.500 ST	N/A	
CCKB-MF/3280	Polaris (E-Z Go)	1.500 ST	N/A	
CCKB-MF/3320	Tuller	1.500 ST	N/A	
CCKB-MF/3357	A. F. Shane	1.500 ST	N/A	
CCKB-MF/3393	Fairmont Railway	1.625 TP	N/A	
CCKB-MF/3395		1.500 ST	N/A	
CCKB-MF/3574	Harrison	1.500 ST	N/A	
CCKB-MF/3639		1.625 TP	N/A	
CCKB-MF/4352	Fairmont Railway	1.625 TP	N/A	
CCKB-MS/1	Master	1.500 ST	N/A	
CCKB-MS/28	Distragen	1.500 ST	N/A	
CCKB-MS/648	Stock	1.500 ST	N/A	
CCKB-MS/1271	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/1322	Gorman Rupp	1.000 ST	N/A	
CCKB-MS/1361			N/A	
CCKB-MS/1369	Frigiking Corp	1.500 ST	N/A	
CCKB-MS/1381	Onan Canada	1.500 ST	N/A	
CCKB-MS/1402		1.500 ST	N/A	
CCKB-MS/1406		1.500 ST	N/A	
CCKB-MS/1478		1.500 ST	N/A	
CCKB-MS/1512			N/A	
CCKB-MS/1523	O'Brien	1.500 ST	N/A	
CCKB-MS/1540	Champion Corp	1.500 ST	N/A	
CCKB-MS/1567		1.500 ST	N/A	
CCKB-MS/1572			N/A	
CCKB-MS/1576	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/1585	Johnson Farm Mach	1.500 ST	N/A	
CCKB-MS/1598		1.500 ST	N/A	
CCKB-MS/1610	Kidde Co.	1.500 ST	N/A	
CCKB-MS/1616		1.500 ST	N/A	
CCKB-MS/1642		1.500 ST	N/A	
CCKB-MS/1647		1.500 ST	N/A	
CCKB-MS/1653		1.500 ST	N/A	
CCKB-MS/1684	Mott Corp	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKB-MS/1691		1.500 ST	N/A	
CCKB-MS/1751	Layton Mfg	1.500 ST	N/A	
CCKB-MS/1756		1.500 ST	N/A	
CCKB-MS/1765	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/1801	Swenson Spreader	1.500 ST	N/A	
CCKB-MS/1805	Layton Mfg	1.500 ST	N/A	
CCKB-MS/1825	A F Shane	1.500 ST	N/A	
CCKB-MS/1829	Loadcraft	1.500 ST	N/A	
CCKB-MS/1835	American Lincoln	1.500 ST	N/A	
CCKB-MS/1838	Winter Engine	1.500 ST	N/A	
CCKB-MS/1869		1.625 ST	N/A	
CCKB-MS/1873	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/1888	Harrison Equip	1.500 ST	N/A	
CCKB-MS/1894		1.125 ST	N/A	
CCKB-MS/1908	Layton Mfg	1.500 ST	N/A	
CCKB-MS/1933		1.500 ST	N/A	
CCKB-MS/1968	Gorman Rupp	1.000 ST	N/A	
CCKB-MS/1990		1.500 ST	N/A	
CCKB-MS/2005	Clearr Corp	1.500 ST	N/A	
CCKB-MS/2006	Clearr Corp	1.500 ST	N/A	
CCKB-MS/2008	Clearr Corp	1.500 ST	N/A	
CCKB-MS/2009	Clearr Corp	1.500 ST	N/A	
CCKB-MS/2031		1.500 ST	N/A	
CCKB-MS/2037	Gorman Rupp	1.500 ST	N/A	
CCKB-MS/2045	American Lincoln	1.500 ST	N/A	
CCKB-MS/2071	Clearr Corp	1.500 ST	N/A	
CCKB-MS/2072		1.500 ST	N/A	
CCKB-MS/2105	Air Tech Ind	1.500 ST	N/A	
CCKB-MS/2113	Clearr Corp	1.500 ST	N/A	
CCKB-MS/2114		1.500 ST	N/A	
CCKB-MS/2142	Tennant	1.437 ST	N/A	
CCKB-MS/2143	Tennant	1.437 ST	N/A	
CCKB-MS/2151	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/2174			N/A	
CCKB-MS/2184		1.500 ST	N/A	
CCKB-MS/2200	Torreys		N/A	
CCKB-MS/2210		1.500 ST	N/A	
CCKB-MS/2218			N/A	
CCKB-MS/2232	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/2266	Pringles Inc	1.500 ST	N/A	
CCKB-MS/2267	Pringles Inc	1.500 ST	N/A	
CCKB-MS/2304		1.500 ST	N/A	
CCKB-MS/2306		1.500 ST	N/A	
CCKB-MS/2313	Fremont	1.500 ST	N/A	
CCKB-MS/2324	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/2336			N/A	
CCKB-MS/2350	J R Greene	1.500 ST	N/A	
CCKB-MS/2378	Wayne Mfg	1.125 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKB-MS/2379			N/A	
CCKB-MS/2420	Simplicity	1.437 ST	N/A	
CCKB-MS/2435	American Lincoln	1.500 ST	N/A	
CCKB-MS/2440	Simplicity	1.437 ST	N/A	
CCKB-MS/2442		1.500 ST	N/A	
CCKB-MS/2512	R C Equip	1.500 ST	N/A	
CCKB-MS/2521	Flex Inc	1.500 ST	N/A	
CCKB-MS/2627	Gorman Rupp	1.500 ST	N/A	
CCKB-MS/2667	Kornylak Corp	1.500 ST	N/A	
CCKB-MS/2671	American Lincoln	1.500 ST	N/A	
CCKB-MS/2679	FMC	1.125 ST	N/A	
CCKB-MS/2719	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/2720	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/2733	Simplicity	1.437 ST	N/A	
CCKB-MS/2736	American Lincoln	1.500 ST	N/A	
CCKB-MS/2746			N/A	
CCKB-MS/2747			N/A	
CCKB-MS/2749	Winter Engine	1.500 ST	N/A	
CCKB-MS/2759	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/2763	Comet	1.500 ST	N/A	
CCKB-MS/2768	FMC	1.125 ST	N/A	
CCKB-MS/2770	Hydra Master(Stock)	1.500 ST	N/A	
CCKB-MS/2771	Hydra Master	1.500 ST	N/A	
CCKB-MS/2775	Wayne Mfg	1.125 ST	N/A	
CCKB-MS/2776	Clear Corp	1.500 ST	N/A	
CCKB-MS/2794		1.125 ST	N/A	
CCKB-MS/2807	Conco Inc	1.500 ST	N/A	
CCKB-MS/2810	Flexible	1.500 ST	N/A	
CCKB-MS/2811	ESCO	1.500 ST	N/A	
CCKB-MS/2816	Kisselinchev Inc	1.500 ST	N/A	
CCKB-MS/2830	C.S.C.	1.500 ST	N/A	
CCKB-MS/2849	ESCO	1.500 ST	N/A	
CCKB-MS/2853	Stock	1.500 ST	N/A	
CCKB-MS/2854	Stock	1.500 ST	N/A	
CCKB-MS/2859	Gorman Rupp	1.000 ST	N/A	
CCKB-MS/2861	Wilson & Cousins	1.125 ST	N/A	
CCKB-MS/2863		1.500 ST	N/A	
CCKB-MS/2864	Sim Holland	1.500 ST	N/A	
CCKB-MS/2874	Schroeder Mfg	1.500 ST	N/A	
CCKB-MS/2875			N/A	
CCKB-MS/2876	Carroll Stuart	1.500 ST	N/A	
CCKB-MS/2878	Purex Corp		N/A	
CCKB-MS/2894			N/A	
CCKB-MS/2895	Flaherty	1.500 ST	N/A	
CCKB-MS/2897	Clarke Div.	9T/SAE A	N/A	
CCKB-MS/2898	Clarke Div.	9T/SAE A	N/A	
CCKB-MS/2899	Hale Pump		N/A	
CCKB-MS/2900	Gorman Rupp	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKB-MS/2906		1.500 ST	N/A	
CCKB-MS/2907		1.500 ST	N/A	
CCKB-MS/2912			N/A	
CCKB-MS/2920	Hydra Master	1.500 ST	N/A	
CCKB-MS/2933	Advance Machine	13T/SAE	N/A	
CCKB-MS/2947	Cal West	1.500 ST	N/A	
CCKB-MS/2953	Flaherty	1.500 ST	N/A	
CCKB-MS/2969	ESCO	1.500 ST	N/A	
CCKB-MS/2984	Ekstroms	1.437 ST	N/A	
CCKB-MS/2985	Hydra Master	1.500 ST	N/A	
CCKB-MS/2989	Lightbourn	1.500 ST	N/A	
CCKB-MS/3017	Selmec	1.500 ST	N/A	
CCKB-MS/3030	Burlec	1.500 ST	N/A	
CCKB-MS/3032	Menge	1.500 ST	N/A	
CCKB-MS/3049	Frigicol	1.625 TP	N/A	
CCKB-MS/3061	Sim Holland	1.500 ST	N/A	
CCKB-MS/3074	Flaherty	1.500 ST	N/A	
CCKB-MS/3083	Electrical Const	1.500 ST	N/A	
CCKB-MS/3089	Henrik A. Fog	1.500 ST	N/A	
CCKB-MS/3098	Fremont	1.500 ST	N/A	
CCKB-MS/3100	ESCO	1.500 ST	N/A	
CCKB-MS/3104	Gorman Rupp	1.000 ST	N/A	
CCKB-MS/3105	Gorman Rupp	1.000 ST	N/A	
CCKB-MS/3113	Electrical Const	1.500 ST	N/A	
CCKB-MS/3116	Scott Ind	1.500 ST	N/A	
CCKB-MS/3140	Flaherty	1.500 ST	N/A	
CCKB-MS/3141	American Lincoln	1.500 ST	N/A	
CCKB-MS/3145	Rockwell Int.	1.500 ST	N/A	
CCKB-MS/3163	Hydra-Master	1.500 ST	N/A	
CCKB-MS/3170	Cal West	1.500 ST	N/A	
CCKB-MS/3193	Flaherty	1.500 ST	N/A	
CCKB-MS/3195	Sentinel	1.500 ST	N/A	
CCKB-MS/3211	ESCO	1.500 ST	N/A	
CCKB-MS/3218	Clear Corp	1.500 ST	N/A	
CCKB-MS/3233	Clear Corp	1.500 ST	N/A	
CCKB-MS/3239	ESCO	1.500 ST	N/A	
CCKB-MS/3280		1.500 ST	N/A	
CCKB-MS/3293	Mark Ind	1.500 ST	N/A	
CCKB-MS/3316	Flaherty	1.500 ST	N/A	
CCKB-MS/3323			N/A	
CCKB-MS/3340	Forces	1.500 ST	N/A	
CCKB-MS/3355	Stock	1.437 ST	N/A	
CCKB-MS/3360	Stock	1.437 ST	N/A	
CCKB-MS/3365	Meco	1.500 ST	N/A	
CCKB-MS/3371	Land Und Marine	1.625 TP	N/A	
CCKB-MS/3395	Flaherty	1.500 ST	N/A	
CCKB-MS/3402	ESCO	1.500 ST	N/A	
CCKB-MS/3430	Onan Illinois	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKB-MS/3439	Gen Unlimited	1.500 ST	N/A	
CCKB-MS/3455	ESCO	1.500 ST	N/A	
CCKB-MS/3456	Tuller	1.500 ST	N/A	
CCKB-MS/3462	Selmec	1.500 ST	N/A	
CCKB-MS/3463	West Fire Equip	1.500 ST	N/A	
CCKB-MS/3473	Fremont	1.500 ST	N/A	
CCKB-MS/3474	Clymar	1.500 ST	N/A	
CCKB-MS/3476	ESCO	1.500 ST	N/A	
CCKB-MS/3485	Electrical Const	1.500 ST	N/A	
CCKB-MS/3489	Silver	1.500 ST	N/A	
CCKB-MS/3494	Stannard Power	1.500 ST	N/A	
CCKB-MS/3504	C.S.C.	1.500 ST	N/A	
CCKB-MS/3545	Wilson & Cousins		N/A	
CCKB-MS/3558	Flaherty	1.500 ST	N/A	
CCKB-MS/3589	Trident	1.437 ST	N/A	
CCKB-MS/3595	West Fire Equip	1.500 ST	N/A	
CCKB-MS/3608	Cal West	1.500 ST	N/A	
CCKB-MS/3639	Mark Ind	1.500 ST	N/A	
CCKB-MS/3645	Winter Engine	1.500 ST	N/A	
CCKB-MS/3658	ESCO	1.500 ST	N/A	
CCKB-MS/3693			N/A	
CCKB-MS/3752	Cal West	1.437 ST	N/A	
CCKB-MS/3760	Evansville Auto	1.500 ST	N/A	
CCKB-MS/3770	Trident	1.500 ST	N/A	
CCKB-MS/3801	Tiller	9T/SAE A	N/A	
CCKB-MS/3808	Ibermaq	1.625 TP	N/A	
CCKB-MS/3821	Standby Power	1.500 ST	N/A	
CCKB-MS/3829	Selmec	1.500 ST	N/A	
CCKB-MS/3849	Burlec	1.500 ST	N/A	
CCKB-MS/3857	Blalock	1.500 ST	N/A	
CCKB-MS/3882	Hydramaster	1.500 ST	N/A	
CCKB-MS/3925	Flaherty	1.500 ST	N/A	
CCKB-MS/3943	Namco	1.500 ST	N/A	
CCKB-MS/3944	Namco	1.500 ST	N/A	
CCKB-MS/3950	Flaherty	1.500 ST	N/A	
CCKB-MS/3965	G.L.T.	1.500 ST	N/A	
CCKB-MS/3969	ESCO	1.500 ST	N/A	
CCKB-MS/3973	Ekstroms	1.250 ST	N/A	
CCKB-MS/3995	Atlas	1.500 ST	N/A	
CCKB-MS/3999	Harrison	13T/SAE	N/A	
CCKB-MS/4004	Mark Ind.	1.500 ST	N/A	
CCKB-MS/4006	Mark Ind.	1.500 ST	N/A	
CCKB-MS/4016	ESCO	1.500 ST	N/A	
CCKB-MS/4036	Meco	1.437 ST	N/A	
CCKB-MS/4043	ESCO	1.500 ST	N/A	
CCKB-MS/4055	Interstate	1.500 ST	N/A	
CCKB-MS/4083	Svc Auto Whse	1.500 ST	N/A	
CCKB-MS/4084	Interstate	9T/SAE A	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.



ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
CCKB-MS/4125	Curtis	13T/SAE	N/A	
CCKB-MSV/ (ALL)			N/A	Vacu-flo cooling
CCKB-S/27	Silver	1.500 ST	N/A	
CCKB-S/28	Selmec	1.500 ST	N/A	
CCKB-S/1507	Bilgrim Gear	1.125	N/A	
CCKB-S/1537		1.500 ST	N/A	
CCKB-S/1597		1.500 ST	N/A	
CCKB-S/1683		1.500 ST	N/A	
CCKB-S/1776		1.500 ST	N/A	
CCKB-S/2157		1.500 ST	N/A	
CCKB-S/2218	Menge Pump	0.985 ST	N/A	
CCKB-S/2233		1.500 ST	N/A	
CCKB-S/2442	Hako-Werke	1.500 ST	N/A	
CCKB-S/2594		1.500 ST	N/A	
CCKB-S/2676		1.500 ST	N/A	
CCKB-S/2726	Hako-Werke	1.500 ST	N/A	
CCKB-S/2729	Hako-Werke	1.500 ST	N/A	
CCKB-S/2875	Schroeder Mfg	1.500 ST	N/A	
CCKB-S/2911	Hako-Werke	1.500 ST	N/A	
CCKB-S/2912	Hako-Werke	1.500 ST	N/A	
CCKB-S/2935	Maquinaria Pacific	1.500 ST	N/A	
CCKB-S/3196	R. C. Equip	1.500 ST	N/A	
CCKB-S/3413	Hako-Werke	1.437 ST	N/A	
CCKB-S/3493	Trident	1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>CCKM</u></b>				
CCKM-MF/471			N/A	
CCKM-MS/1674		1.500 ST	N/A	
CCKM-MS/1899	Military	1.125 ST	N/A	
CCKM-MS/2050		1.500 ST	N/A	
CCKM-MS/2126		1.500 ST	N/A	
CCKM-MS/2504	Military	1.125 ST	N/A	
CCKM-MS/2964		1.500 ST	N/A	
CCKM-MSV/ (ALL)			N/A	Vacu-flo cooling
CCKM-S/598E		1.500 ST	N/A	

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>CK</u></b>				
CK-MS/261				N/A
CK-S/35	MILLER	1.625 TP		N/A
CK-S/199				N/A
CK-S/259	MILLER	1.625 TP		N/A
CK-S/656		1.500 ST		N/A
<b><u>J120</u></b>				
J120 (ALL)				N/A
<b><u>J60</u></b>				
J60 (ALL)				N/A
<b><u>JB</u></b>				
JB (ALL)				N/A
<b><u>JC</u></b>				
JC (ALL)				N/A
<b><u>JCM</u></b>				
JCM (ALL)				N/A
<b><u>L25</u></b>				
L25 (ALL)				N/A
<b><u>LKB</u></b>				
LKB (ALL)				N/A

<sup>1</sup> PTO stub nominal dia (in), if applicable.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>N52M</u></b>				
N52M-GA019.9/3411	Roper/Sears	45BB	P220G-I/10940	18, 61, 91
N52M-GA019.9/3447	Stock	45BE	P220G-I/10933	44, 77, 91
N52M-GA019.9/3448	Stock	45BE	P220G-I/10933	18, 44, 91
N52M-GA019.9/3521	Meco	45BE	P220G-I/10933	19, 29, 32, 44, 55, 61, 69, 91
N52M-GA019.9/3564	Lightbourn	45BS	P220G-I/11253	18, 61, 85, 91
N52M-GA019.9/3580	Roper/Sears	45BB	P220G-I/10940	61, 91
N52M-GA019.9/3581	Meco	45BE	P220G-I/10933	19, 29, 32, 44, 55, 61, 91
N52M-GA019.9/3593	Gravely	45CA	N/A	Crmkshft not serviced with rpl eng
N52M-GA019.9/3601	Stock	45BE	P220G-I/10933	4, 44, 91
N52M-GA019.9/3613	Tuller	45BB	P220G-I/10940	15, 69, 91
N52M-GA019.9/3638	Ransomes	45BB	P220G-I/10940	15, 35, 73, 91
N52M-GA019.9/3644	Elec. Const.	45BE	P220G-I/10933	18, 31, 91, 94
N52M-GA019.9/3663	Flaherty	45BU	P220G-I/11254	18, 53, 86, 91
N52M-GA019.9/3664	Flaherty	45BS	P220G-I/11253	18, 53, 85, 91
N52M-GA019.9/3785	Hoshall Ind.	45BE	P220G-I/10933	44, 53, 77, 91
N52M-GA019.9/3809	Lightbourn	45BS	P220G-I/11253	18, 44, 61, 85, 91
N52M-GA019.9/3817	Lightbourn	45BT	P220G-I/11255	77, 86, 91
N52M-GA019.9/3820	Roper/Sears	45BB	P220G-I/10940	61, 91
N52M-GA019.9/3879	Faguy	45BU	P220G-I/11254	18, 69, 86, 91, 94

**NB**

NB (ALL) \_\_\_\_\_ N/A

**NH**

NH-F/2274	_____	45BE	P224G-I/11257	6.1, 47, 66, 95
<b>NH-MF/1</b>				
NH-MS/1	_____	45BE	P224G-I/11257	15, 16, 18, 47, 95
NH-MS/1832	_____	45BE	P224G-I/11257	15, 16, 18, 47, 95
NH-MS/1918	Hydra-Mac	45BE	P224G-I/11257	15, 18, 47, 95
NH-MS/1925	_____	_____	N/A	_____
NH-MS/1952	_____	45BE	P224G-I/11257	15, 18, 91, 95
NH-MS/1980	Turf Vac Comp	45BE	P224G-I/11257	47, 77, 95
NH-MS/1981	Carrol-Stuart	45BE	P224G-I/11257	34, 47, 77, 95
NH-MS/1985	_____	_____	N/A	Vacu-flo cooling
NH-MS/2024	_____	_____	N/A	Vacu-flo cooling
NH-MS/2053	Charles Machine	45BE	P224G-I/11257	15, 18, 47, 61, 95
NH-MS/2055	Silver	45BE	P224G-I/11257	15, 18, 91, 95
NH-MS/2057	_____	45BE	P224G-I/11257	47, 77, 95
NH-MS/2069	Winter	_____	N/A	Vacu-flo cooling
NH-MS/2074	O'Bear & Sons	45BE	P224G-I/11257	47, 61, 77, 95

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
NH-MS/2118	Wayne (Leroi)	45BE	P224G-I/11257	77, 91, 95
NH-MS/2119	AKSA		N/A	Vacu-flo cooling
NH-MS/2120	Pioneer	45BT	P224G-I/11260	47, 69, 77, 86, 95
NH-MS/2128	Charles Machine	45BE	P224G-I/11257	15, 18, 47, 61, 95
NH-MS/2136	Charles Machine	45BE	P224G-I/11257	15, 18, 47, 61, 95
NH-MS/2138	Layton Mfg. Co.	45BE	P224G-I/11257	34, 47, 77, 95
NH-MS/2145	Tennant	45BE	P224G-I/11257	7, 15, 16, 18, 34, 47, 95
NH-MS/2146	Tennant		N/A	LP fuel
NH-MS/2154			N/A	Vacu-flo cooling
NH-MS/2196	Case-Davis	45BE	P224G-I/11257	47, 77, 95
NH-MS/2199	Trackless Vehicles	45BE	P224G-I/11257	3, 15, 18, 91, 95
NH-MS/2231	Liquidonics		N/A	Vacu-flo cooling
NH-MS/2242			N/A	Cmkshft not serviced with rpl eng
NH-MS/2259	Owatonna	45BE	P224G-I/11257	15, 17, 18, 23, 32, 38, 47, 95
NH-MS/2262	Wheel Power		N/A	Cmkshft not serviced with rpl eng
NH-MS/2275	Faguy		N/A	Vacu-flo cooling
NH-MS/2283	Layton Mfg. Co.	45BE	P224G-I/11257	7, 15, 18, 34, 47, 95
NH-MS/2288	Specialized Equip.	45BE	P224G-I/11257	15, 17, 18, 23, 32, 47, 95
NH-MS/2394	Leroi		N/A	Vacu-flo cooling
NH-MS/2396	Sun Ray Burner		N/A	Vacu-flo cooling, spl spline crkshft
NH-MS/2497				
NH-MS/2589			N/A	Vacu-flo cooling
NH-MS/2849		45BE	P224G-I/11257	15, 18, 47, 95

**NHA**

NHA-MF/1967	McEntyre Bros.	45BE	P224G-I/11257	6.1, 15, 16, 18, 44, 95
NHA-MS/2569	Thermo King		N/A	Vacu-flo cooling
NHA-MS/2570		45BE	P224G-I/11257	44, 61, 77, 95
NHA-MS/2571		45BE	P224G-I/11257	15, 18, 44, 61, 95
NHA-MS/2641	Hughes Keenan		N/A	Cmkshft not serviced with rpl eng
NHA-MS/2913	Hughes Keenan		N/A	Cmkshft not serviced with rpl eng
NHA-MS/3191	Diem	45BE	P224G-I/11257	15, 16, 18, 19, 44, 69, 95
NHA-MS/3208	Lightbourn	45BE	P224G-I/11257	15, 16, 18, 44, 55, 95
NHA-MS/3252	McEntyre Bros.	45BS	P224G-I/11258	15, 18, 44, 61, 85, 95
NHA-MS/3377	Comet	45BS	P224G-I/11258	44, 77, 85, 95

**NHAV**

NHAV-MS/ (ALL)			N/A	Vacu-flo cooling
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<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>NHB</u></b>				
NHB-MF/1967	McEntyre Bros.	45BE	P224G-I/11257	6.1, 15, 16, 18, 44, 95
NHB-MF/2617	Horvick	45BE	P224G-I/11257	6.1, 44, 77, 95
NHB-MS/2270	G.L.T.	45BE	P224G-I/11257	15, 16, 18, 44, 95
NHB-MS/2570	Stock	45BE	P224G-I/11257	44, 61, 77, 95
NHB-MS/2571	Stock	45BE	P224G-I/11257	15, 18, 44, 61, 95
NHB-MS/2576	McEntyre Bros.	45BE	P224G-I/11257	44, 69, 77, 95
NHB-MS/2607	Hydra-Dyne Corp.	45BT	P224G-I/11260	23, 44, 55, 61, 77, 95
NHB-MS/2725	Hydra-Dyne Corp.	45BT	P224G-I/11260	23, 44, 55, 61, 77, 95
NHB-MS/2784	Frink Sno-Plow	45BT	P224G-I/11260	15, 18, 23, 44, 55, 85, 95
NHB-MS/2823	Excel Ind. Inc.			Special cooling package
NHB-MS/3012	Vermeer	45BE	P224G-I/11257	15, 16, 18, 23, 44, 95
NHB-MS/3069	Vermeer	45BE	P224G-I/11257	15, 16, 18, 44, 95
NHB-MS/3126	Frink-Sno Plows	45BT	P224G-I/11260	15, 18, 44, 55, 85, 95
NHB-MS/3143	Comet			Special cooling package
NHB-MS/3208	Lightbourn	45BE	P224G-I/11257	15, 16, 18, 44, 55, 95
NHB-MS/3230	Foster Mfg.			Special cooling package
NHB-MS/3274	Harrison	45BT	P224G-I/11260	44, 55, 61, 77, 86, 95
NHB-MS/3296	Tuller	45BT	P224G-I/11260	44, 55, 77, 85, 95
NHB-MS/3351	Wisconsin Marine			Special cooling package
NHB-MS/3357			N/A	Crnkshft not serviced with rpl eng
NHB-MS/3377	Comet	45BS	P224G-I/11258	44, 77, 85, 95
NHB-MS/3457	Tuller	45BT	P224G-I/11260	15, 18, 44, 55, 85, 95
NHB-MS/3471	Ekstrom	45BE	P224G-I/11257	15, 18, 44, 69, 95
NHB-MS/3498	Silver	45BE	P224G-I/11257	44, 77, 95
NHB-MS/3519	Harrison	45BS	P224G-I/11258	4, 15, 18, 44, 61, 85, 95
NHB-MS/3555	Equipment Sales	45BT	P224G-I/11260	44, 61, 77, 86, 95
NHB-MS/3598	Tuller	45BT	P224G-I/11260	18, 23, 44, 55, 85, 95, 97
NHB-MS/3604	Stock	45BE	P224G-I/11257	4, 18, 44, 61, 95
NHB-MS/3610	Ekstrom	45BE	P224G-I/11257	15, 18, 44, 69, 95
NHB-MS/3623	Tuller	45BE	P224G-I/11260	18, 23, 44, 55, 85, 95, 97
NHB-MS/3708	Electrical Engrg.	45BE	P224G-I/11257	15, 16, 18, 44, 95
NHB-MS/3765	Lahman	45BE	P224G-I/11257	18, 37, 44, 61, 95
NHB-MS/3797	McEntyre	45BS	P224G-I/11258	15, 18, 44, 61, 85, 95
NHB-MS/3900	Stock	45BE	P224G-I/11257	4, 18, 44, 61, 95
NHB-MS/3901	Electrical Engrg.	45BE	P224G-I/11257	15, 16, 18, 44, 95
NHB-MS/3921	Stock	45BE	P224G-I/11257	44, 61, 77, 95
NHB-MS/3959	Harrison	45BT	P224G-I/11260	44, 61, 77, 95
NHB-MS/4066	Harrison	45BT	P224G-I/11260	44, 61, 77, 95
NHB-MS/4082	Midwestern Power	45BE	P224G-I/11257	7, 15, 18, 37, 44, 95
NHB-MS/4201	G.L.T.	45BE	P224G-I/11257	4, 18, 44, 61, 95
NHB-MS/4282	Crafco	45BT	P224G-I/11260	44, 61, 77, 86, 95

**NHBV**

NHBV-MS/ (ALL)		N/A	Vacu-flo cooling
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<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>NHC</u></b>				
NHC-3MG/ (ALL)			N/A	Crmkshft not serviced with rpl eng
NHC-4MG/ (ALL)			N/A	Crmkshft not serviced with rpl eng
NHC-MF/2648	Rapat Ind			
NHC-MF/2877	Kemp Shredder Co			
NHC-MS/1		45BE	P224G-I/11257	16, 44, 47, 95
NHC-MS/28	Distragen	45BE	P224G-I/11257	44, 47, 77, 95
NHC-MS/1918		45BE	P224G-I/11257	44, 47, 77, 95
NHC-MS/1981		45BE	P224G-I/11257	34, 47, 77, 95
NHC-MS/2138		45BE	P224G-I/11257	34, 47, 77, 95
NHC-MS/2145		45BE	P224G-I/11257	18, 34, 44, 47, 95
NHC-MS/2169		45BE	P224G-I/11257	23, 77, 91, 95
NHC-MS/2199		45BE		
NHC-MS/2270		45BE	P224G-I/11257	16, 44, 47, 95
NHC-MS/2302	Tennant	45BE	N/A	
NHC-MS/2303	Tennant	45BE	N/A	
NHC-MS/2313	Menge	45BE	P224G-I/11257	44, 47, 77, 95
NHC-MS/2342		45BE	P224G-I/11257	38, 44, 47, 48, 77, 95
NHC-MS/2344		45BE	P224G-I/11257	44, 47, 61, 77, 95
NHC-MS/2349	Layton	45BE	P224G-I/11257	34, 44, 47, 77, 95
NHC-MS/2362	Turf Vac	45BE	P224G-I/11257	44, 47, 77, 95
NHC-MS/2364	Thego	45BT	P224G-I/11260	44, 47, 77, 85, 95
NHC-MS/2365		45BE	P224G-I/11257	15, 18, 44, 47, 95
NHC-MS/2372	Charles Machine	45BE	P224G-I/11257	15, 18, 44, 47, 61, 95
NHC-MS/2374		45BE	P224G-I/11257	N/A
NHC-MS/2375	Ken Tel, Cinn Elect	45BE	P224G-I/11257	44, 47, 48, 77, 95
NHC-MS/2377	Davis Mfg	45BE	P224G-I/11257	37, 44, 47, 48, 58, 77, 95
NHC-MS/2380	O'Bear & Sons, Inc	45BE	P224G-I/11257	44, 47, 61, 77, 95
NHC-MS/2385	John Deere	45BE	P224G-I/11257	18, 44, 47, 83, 95
NHC-MS/2386	GHH Development	45BE	P224G-I/11257	18, 44, 47, 83, 95
NHC-MS/2406	Ramcher	45BE	P224G-I/11257	38, 44, 47, 48, 77, 95
NHC-MS/2408	Winter	45BE	P224G-I/11257	16, 38, 47, 95
NHC-MS/2414	Menge Pump	45BE	P224G-I/11257	44, 47, 77, 95
NHC-MS/2417			N/A	Crmkshft not serviced with rpl eng
NHC-MS/2429	Faguy	45BE	P224G-I/11257	34, 44, 47, 77, 95
NHC-MS/2430	Esco	45BE	P224G-I/11257	34, 44, 47, 48, 77, 95
NHC-MS/2433	Distragen	45BE	P224G-I/11257	44, 47, 48, 95
NHC-MS/2436	American Lincoln	45BE	P224G-I/11257	15, 18, 38, 47, 95
NHC-MS/2451	Shugart	45BE	P224G-I/11257	32, 44, 47, 48, 77, 95
NHC-MS/2456	Esco	45BE		
NHC-MS/2464	PCM Div	45BT	P224G-I/11260	15, 18, 39, 47, 86, 95
NHC-MS/2467	Tennant	45BE	N/A	
NHC-MS/2469	Tennant	45BE	N/A	
NHC-MS/2476	Hydra-Mac	45BE	P224G-I/11257	15, 18, 37, 47, 58, 95
NHC-MS/2477		45BE	N/A	

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
NHC-MS/2478	Wheel Power		N/A	Crnkshft not serviced with rpl eng
NHC-MS/2479	PCM	45BT	P224G-I/11260	15, 18, 38, 39, 47, 86, 95
NHC-MS/2487	Tennant	45BE	N/A	
NHC-MS/2488	Tennant	45BE	N/A	
NHC-MS/2491	Koehring-Master Div	45BT	P224G-I/11260	15, 34, 44, 47, 48, 77, 86, 95
NHC-MS/2497	Winter Engine	45BE		
NHC-MS/2498	Onan Eastern	45BE	P224G-I/11257	15, 16, 18, 44, 47, 48, 95
NHC-MS/2502	Harrison	45BT	P224G-I/11260	44, 47, 77, 86, 95
NHC-MS/2503	Miller Electric	45CB	N/A	
NHC-MS/2510	Dev Test Corp		N/A	
NHC-MS/2517	Wheel Power		N/A	Crnkshft not serviced with rpl eng
NHC-MS/2530	Atlas Lawn, Cinn Elec	45BE	P224G-I/11257	34, 44, 47, 61, 77, 95
NHC-MS/2531	Mrlly Murphy, Cal Wst	45BT	P224G-I/11260	44, 47, 77, 86, 95
NHC-MS/2538	Owatonna	45BE	P224G-I/11257	7,15,18,23,32,38, 47, 61, 62, 95
NHC-MS/2540	American Lincoln	45BE		
NHC-MS/2541	Cal West	45BE	P224G-I/11257	34, 38, 44, 47, 77, 95
NHC-MS/2543	Davis	45BE	P224G-I/11257	37, 44, 47, 48, 58, 61, 77, 95
NHC-MS/2565	Badger Dynamics	45BT	P224G-I/11260	15, 18, 23, 39, 47, 85, 95
NHC-MS/2568	Flexible Inc	45BE	P224G-I/11257	15, 18, 23, 44, 47, 48, 95
NHC-MS/2570	Stock	45BE	P224G-I/11257	44, 47, 61, 95, 103
NHC-MS/2571	Stock	45BE	P224G-I/11258	15, 18, 44, 47, 61, 95
NHC-MS/2572	PCM	45BT	P224G-I/11260	15, 18, 23, 38, 39, 47, 86, 95
NHC-MS/2577	Clark Equip	45BT	N/A	Vacu-flo cooling
NHC-MS/2580	Fremont	45BE	P224G-I/11257	34, 44, 47, 77, 95
NHC-MS/2581	Winter Engine	45BE		
NHC-MS/2592	Simson-Maxwell	45BE	P224G-I/11257	34, 44, 47, 48, 77, 95
NHC-MS/2613	Distragen	45BE	P224G-I/11257	47, 48, 77, 95
NHC-MS/2618	Hydra-Mac	45BE	P224G-I/11257	15, 18, 32, 37, 58, 47, 95
NHC-MS/2623	Erickson	45BT	P224G-I/11260	15, 18, 39, 47, 61, 62, 85, 95
NHC-MS/2624	GLT, Ronco	45BE	P224G-I/11257	44, 47, 69, 77, 95
NHC-MS/2626		45BE	P224G-I/11257	18, 44, 47, 95
NHC-MS/2627	Powertronic	45BE	P224G-I/11257	15, 18, 47, 95
NHC-MS/2628	Hesston	45BE	P224G-I/11257	44, 47, 77, 95
NHC-MS/2635	Pioneer Seed Div	45BT	P224G-I/11260	47, 48, 61, 69, 77, 86, 95
NHC-MS/2636	Badger Dynamics	45BT	P224G-I/11260	15, 18, 39, 47, 85, 95
NHC-MS/2642	Silver, Fremont	45BE	P224G-I/11257	34, 44, 47, 69, 77, 95
NHC-MS/2644	Tennant	45BE	N/A	
NHC-MS/2645	Tennant	45BE	N/A	
NHC-MS/2652	American Lincoln	45BE		
NHC-MS/2664	Selmec	45BE	P224G-I/11257	44, 47, 61, 77, 95
NHC-MS/2672	Advance Machine	45BT		
NHC-MS/2684	Trackless Vhcl, Burlec	45BE		
NHC-MS/2698	Davis	45BE	P224G-I/11257	37, 44, 47, 48, 58, 61, 77, 95
NHC-MS/2699	Owatonna	45BE	P224G-I/11257	7,15,18,23,32,38,44,47,61,62, 95
NHC-MS/2702	Atlas	45BE	P224G-I/11257	23, 34, 44, 47, 55, 61, 77, 95
NHC-MS/2703	Erickson	45BT	P224G-I/11260	15, 18, 39, 44, 47, 61, 62, 85, 95
NHC-MS/2704	Menge, Amer Lincoln	45BE		
NHC-MS/2705	Tennant	45BE	N/A	

<sup>1</sup> For PTO stub description, see Appendix A.



ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
NHC-MS/2706	Tennant	45BE	N/A	
NHC-MS/2707	Tennant	45BE	N/A	
NHC-MS/2708	Tennant	45BE	N/A	
NHC-MS/2710	Badger Dynamics	45BT	P224G-I/11260	15, 18, 39, 44, 47, 85, 95
NHC-MS/2717	Flexible Inc	45BE	P224G-I/11257	15, 18, 23, 44, 47, 48, 95
NHC-MS/2718	Advance Machine	45BT		
NHC-MS/2721	Pioneer Seed	45BT	P224G-I/11260	44, 47, 48, 61, 69, 77, 86, 95
NHC-MS/2731	Hydra-Mac	45BE	P224G-I/11257	15, 18, 32, 37, 44, 47, 58, 95
NHC-MS/2732	Hydra-Mac	45BE	P224G-I/11257	15, 18, 32, 37, 44, 47, 58, 95
NHC-MS/2763	Meco	45BE	P224G-I/11257	16, 18, 44, 47, 95
NHC-MS/2786	Atlas Lawn	45BE	P224G-I/11257	23, 34, 44, 47, 61, 77, 95
NHC-MS/2801	Faguy	45BE	P224G-I/11257	15, 18, 23, 44, 47, 53, 61, 95
NHC-MS/2829	Rockwell	45BE	P224G-I/11257	44, 47, 61, 69, 77, 95
NHC-MS/2834	Generator Power	45BE	P224G-I/11257	44, 47, 48, 77, 86, 95
NHC-MS/2838	Distragen	45BE	P224G-I/11257	44, 47, 48, 77, 95
NHC-MS/2846	Cal West	45BT	P224G-I/11260	23, 34, 44, 47, 53, 77, 85, 95
NHC-MS/2849	Flaherty, Distragen	45BE	P224G-I/11257	44, 47, 77, 95
NHC-MS/2856	FMC Corp	45BE	P224G-I/11257	23, 34, 44, 47, 55, 69, 77, 95
NHC-MS/2867	Cal West		N/A	
NHC-MS/2884	Pioneer Seed	45BT	P224G-I/11260	34, 44, 47, 48, 61, 69, 77, 86, 95
NHC-MS/2889		45BE	P224G-I/11257	39, 44, 47, 77, 95
NHC-MS/2896		45BE	P224G-I/11257	23, 44, 48, 77, 91, 95
NHC-MS/2909		45BE		
NHC-MS/2913				Crmkshft not serviced with rpl eng
NHC-MS/2914	Clymar	45BE	P224G-I/11257	34, 44, 47, 95
NHC-MS/2916	Tennant	45BE	N/A	
NHC-MS/2917	Tennant	45BE	N/A	
NHC-MS/2918	Tennant	45BE	N/A	
NHC-MS/2919	Tennant	45BE	N/A	
NHC-MS/2922	Charles Machine	45BE	P224G-I/11257	15, 18, 44, 47, 61, 95
NHC-MS/2954	Cal West	45BT	P224G-I/11260	23, 34, 44, 47, 53, 77, 86, 95
NHC-MS/2991	Tennant	45BE	N/A	
NHC-MS/2992	Tennant	45BE	N/A	
NHC-MS/2993	Tennant	45BE	N/A	
NHC-MS/2994	Tennant	45BE	N/A	
NHC-MS/2999	Atlas Lawn	45BE	P224G-I/11257	23, 34, 44, 47, 61, 77, 95
NHC-MS/3009	Lehara Equip	45BT	P224G-I/11260	23, 44, 47, 69, 86, 95
NHC-MS/3016	Layton	45BE	P224G-I/11257	34, 39, 44, 47, 77, 95
NHC-MS/3034	Tymco	45BE	P224G-I/11257	15, 18, 39, 44, 47, 61, 95
NHC-MS/3052	Advance Machine	45BT	P224G-I/11260	3, 7, 15, 18, 39, 44, 47, 48, 85, 95
NHC-MS/3056	Westerbeke	45BT	P224G-I/11260	15, 18, 39, 44, 47, 86, 95
NHC-MS/3071	Tennant	45BE	N/A	
NHC-MS/3072	Tennant	45BE	N/A	
NHC-MS/3073	Tennant	45BE	N/A	
NHC-MS/3077	Case-Davis	45BE	P224G-I/11257	18, 23, 37, 44, 47, 48, 58, 61, 77, 95
NHC-MS/3094	Hydra-Mac	45BE	P224G-I/11257	15, 18, 23, 32, 37, 44, 47, 58, 95
NHC-MS/3097	Elec. Const.	45BE	P224G-I/11257	15, 18, 34, 44, 47, 95
NHC-MS/3102	Layton Mfg	45BE	P224G-I/11257	34, 39, 44, 47, 77, 95

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
NHC-MS/3103	Tymco	45BE	P224G-I/11257	15, 18, 34, 39, 44, 47, 61, 95
NHC-MS/3107	Howard Comm.	45BE	P224G-I/11257	34, 44, 47, 61, 77, 95
NHC-MS/3115				
NHC-MS/3125	Badger Dynamics	45BT	P224G-I/11260	15, 18, 39, 40, 44, 47, 85, 95
NHC-MS/3131	C W Silver	45BE	P224G-I/11257	23, 34, 44, 47, 53, 77, 95
NHC-MS/3144	Davis	45BE	P224G-I/11257	44, 47, 48, 61, 77, 95
NHC-MS/3146	Davis	45BE		
NHC-MS/3151	Elec. Eng.	45BE	P224G-I/11257	34, 44, 47, 77, 95
NHC-MS/3152	Tymco Inc	45BE	P224G-I/11257	15, 18, 34, 39, 44, 47, 61, 95
NHC-MS/3154	Erickson	45BT	P224G-I/11260	15, 18, 39, 44, 47, 61, 62, 85, 95
NHC-MS/3155	Fox Grove Sod	45BE	P224G-I/11257	15, 18, 23, 44, 47, 48, 61, 95
NHC-MS/3168	Cal West		N/A	Crnkshft not serviced with rpl eng
NHC-MS/3194	Simson Maxwell	45BE	P224G-I/11257	34, 44, 47, 53, 61, 77, 95
NHC-MS/3203	Charles Machine	45BE	P224G-I/11257	15, 18, 44, 47, 61, 95
NHC-MS/3209	Simson Maxwell	45BE	P224G-I/11257	15, 18, 34, 44, 47, 53, 61, 95
NHC-MS/3220	Clymar	45BT	P220G-I/11260	15, 18, 39, 44, 47, 85, 95
NHC-MS/3247		45BE		
NHC-MS/3254	Case-Davis	45BE	P224G-I/11257	15, 18, 41, 44, 47, 61, 95
NHC-MS/3261	Faguy	45BE	P224G-I/11257	34, 44, 47, 77, 95
NHC-MS/3285	Owatonna	45BE	P224G-I/11257	15, 18, 34, 38, 44, 47, 61, 62, 95
NHC-MS/3286	FMC Corp	45BE	P224G-I/11257	34, 39, 44, 47, 48, 69, 77, 95
NHC-MS/3287	Tennant	45BE		
NHC-MS/3298	Ferreteria Caroni	45BE	P224G-I/11257	44, 47, 69, 77, 95
NHC-MS/3308	Gehl	45BE	P224G-I/11257	15, 18, 32, 38, 44, 47, 95
NHC-MS/3319	Esco	45BT	P224G-I/11260	34, 44, 47, 55, 61, 77, 86, 95
NHC-MS/3335	Charles Machine	45BE	P224G-I/11257	15, 18, 44, 47, 61, 95
NHC-MS/3346	Case-Davis	45BE	P224G-I/11257	15, 18, 23, 38, 44, 47, 61, 95
NHC-MS/3348	Erickson	45BT	P224G-I/11260	15, 18, 39, 44, 47, 61, 62, 85, 95
NHC-MS/3361	Foster Mfg	45BE		Special cooling package
NHC-MS/3376	Meco	45BE	P224G-I/11257	15, 44, 91, 95
NHC-MS/3391	Henrik A Fog		N/A	Taper PTO stub
NHC-MS/3392	Lightbourn	45BE	P224G-I/11257	15, 18, 32, 44, 69, 91, 95
NHC-MS/3404	Anderson Equip	45BT	P224G-I/11260	44, 47, 48, 77, 86, 95
NHC-MS/3406	Owatonna	45BE	P224G-I/11257	4,7,15,18,29,37,44,47,62, 95, 102
NHC-MS/3468	Distragen	45BE	N/A	Six hole block
NHC-MS/3469	Meco	45BE	P224G-I/11257	15, 16, 44, 47, 48, 95
NHC-MS/3481	Gehl	45BE	P224G-I/11257	15, 18, 32, 37, 40, 44, 47, 95
NHC-MS/3482	Esco	45BE	P224G-I/11257	44, 47, 48, 77, 95, 101
NHC-MS/3518	Advance Machine	45BT	P224G-I/11260	3, 7,15, 18, 39, 44, 47, 48, 85, 95
NHC-MS/3538	Garlock	45BS	P224G-I/11258	44, 47, 77, 85, 95, 101
NHC-MS/3597	Garlock	45BS	P224G-I/11258	15, 18, 44, 47, 69, 85, 95
NHC-MS/3624	Elec Eng	45BT	P224G-I/11260	18, 37, 44, 47, 69, 85, 95
NHC-MS/3626	Stock	45BE	P224G-I/11257	44, 47, 95, 101
NHC-MS/3637	Hydra-Mac	45BE	P224G-I/11257	7,15,29,32,37,44,47,62,73,95,102
NHC-MS/3646	Cal West	45BT	P224G-I/11260	15, 18, 34, 44, 47, 86, 95, 101
NHC-MS/3673	Elec Eng	45BE	P224G-I/11257	15, 18, 44, 47, 69, 95, 101
NHC-MS/3715	Clymar	45BS	P224G-I/11258	15, 16, 18, 34, 44, 47, 85, 95
NHC-MS/3727	Elec. Eng.	45BT	P224G-I/11260	18, 44, 47, 69, 86, 95

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
NHC-MS/3730	Winter	45BT	P224G-I/11260	44, 47, 69, 77, 86, 95, 101
NHC-MS/3762	Erickson	45BT	P224G-I/11260	15, 18, 37, 44, 47, 62, 85, 95, 101
NHC-MS/3780	Stannard Power	45BE	P224G-I/11257	44, 47, 95, 101, 103
NHC-MS/3793	S.A.W.	45BE	P224G-I/11257	44, 47, 95, 101, 103
NHC-MS/3806	Equipment Sales	45BE	P224G-I/11257	37, 44, 47, 95, 101, 103
NHC-MS/3822	Owatonna	45BE	P224G-I/11257	4, 7, 15, 18, 29, 37, 44, 47, 62, 95, 102
NHC-MS/3832	Oakes/Prime Mover	45BE	P224G-I/11257	37, 44, 47, 95
NHC-MS/3837	Ingersoll-Rand	45BE	P224G-I/11257	44, 47, 95, 101, 103
NHC-MS/3843	Lightbourn	45BS	P224G-I/11259	44, 47, 86, 95, 101
NHC-MS/3863	Henrik A Fog		N/A	Six hole block, Taper PTO stub
NHC-MS/3865	Charles Machine	45BE	P224G-I/11257	15, 44, 47, 95, 101
NHC-MS/3866	Stannard Power	45BE	P224G-I/11257	44, 47, 95, 101, 103
NHC-MS/3868	Hydra-Mac	45BE	P224G-I/11257	7, 15, 18, 23, 32, 37, 44, 47, 95
NHC-MS/3888	Stock	45BE	P224G-I/11257	4, 44, 47, 95, 101
NHC-MS/3889	Erickson	45BT	P224G-I/11260	15, 18, 37, 44, 47, 62, 85, 95, 101
NHC-MS/3898	Equipment Sales	45BE	P224G-I/11257	37, 44, 47, 95, 101, 103
NHC-MS/3903	Winter Engine	45BT	P224G-I/11260	44, 47, 69, 77, 86, 95, 101
NHC-MS/3904	Garlock	45BS	P224G-I/11258	44, 47, 85, 95, 101, 103
NHC-MS/3905	Distragen	45BE	N/A	Six hole block
NHC-MS/3906	Erickson	45BT	P224G-I/11260	15, 18, 39, 44, 47, 61, 62, 85, 95
NHC-MS/3907	Case-Davis	45BE	P224G-I/11257	15, 18, 23, 38, 44, 47, 95, 101
NHC-MS/3910	Tennant	45BE	N/A	
NHC-MS/3911	Owatonna	45BE	P224G-I/11257	15, 18, 34, 38, 44, 47, 61, 62, 95
NHC-MS/3912	Tennant	45BE	N/A	
NHC-MS/3913	Tennant	45BE	N/A	
NHC-MS/3914	Tennant	45BE	N/A	
NHC-MS/3916	Badger Dynamics	45BT	P224G-I/11260	15, 18, 39, 44, 47, 85, 95
NHC-MS/3917	Hydra-Mac	45BE	P224G-I/11257	15, 18, 23, 32, 37, 44, 47, 58, 95
NHC-MS/3918	Case-Davis	45BE	P224G-I/11257	23, 37, 44, 47, 48, 58, 61, 77, 95
NHC-MS/3919	Stock	45BE	P224G-I/11257	15, 18, 44, 47, 61, 95
NHC-MS/3920	Stock	45BE	P224G-I/11257	44, 47, 61, 95, 103
NHC-MS/3921		45BE	P224G-I/11257	44, 47, 95, 101, 103
NHC-MS/3923	Pioneer Seed	45BT	P224G-I/11260	34, 44, 47, 48, 69, 77, 86, 95, 101
NHC-MS/3934	Distragen	45BE		
NHC-MS/3937	Advance Machine	45BT	P224G-I/11260	3, 15, 18, 39, 44, 47, 48, 85, 95
NHC-MS/3952	Winter Engine	45BT	P224G-I/11260	44, 47, 61, 69, 77, 86, 95
NHC-MS/3958	Fremont Electric	45BT	P224G-I/11260	7, 15, 18, 39, 44, 47, 86, 95
NHC-MS/3961	Cal West	45BT	P224G-I/11260	15, 18, 34, 44, 47, 86, 95, 101
NHC-MS/3962	Harrison	45BT	P224G-I/11260	44, 47, 77, 86, 95
NHC-MS/3967	Gehl	45BE	P224G-I/11257	7, 15, 18, 32, 38, 44, 47, 95
NHC-MS/3968	Flaherty	45BS	P224G-I/11258	15, 18, 37, 44, 47, 69, 85, 95
NHC-MS/3970	Saskatchewan WP	45BE		Fuel tank
NHC-MS/3971	Sansom	45BE	P224G-I/11257	4, 7, 44, 47, 48, 77, 95
NHC-MS/3977	Charles Machine	45BE	P224G-I/11257	15, 44, 47, 95, 101
NHC-MS/3982	Gehl	45BE	P224G-I/11257	15, 32, 37, 40, 44, 47, 95
NHC-MS/3990	Menge	45BS	P224G-I/11259	32, 44, 47, 55, 69, 86, 95, 101
NHC-MS/3994	Simson Maxwell	45BT	P224G-I/11260	44, 47, 86, 95, 101, 103
NHC-MS/4015	Menge	45BU	P224G-I/11259	32, 44, 47, 86, 95, 102

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
NHC-MS/4019	Interstate	45BS	P224G-I/11258	37, 44, 47, 69, 85, 95
NHC-MS/4022	Midwestern Power	45BE	P224G-I/11257	19, 44, 47, 69, 95, 102
NHC-MS/4023	Simson Maxwell	45BE	P224G-I/11257	44, 47, 86, 95, 101, 103
NHC-MS/4027	Interstate Power	45BS	P224G-I/11258	15, 37, 44, 47, 69, 85, 95, 101
NHC-MS/4037	Owatonna	45BB	P224G-I/11256	15, 18, 37, 47, 62, 69, 95, 102
NHC-MS/4073	Winter Engine	45BE	P224G-I/11257	15, 16, 44, 47, 95
NHC-MS/4078	Stannard Power	45BE	P224G-I/11257	15, 16, 18, 19, 44, 47, 95
NHC-MS/4091	Trident	45BE	P224G-I/11257	15, 44, 47, 95, 119
NHC-MS/4112	Total Power	45BE	P224G-I/11257	4, 44, 47, 95, 103
NHC-MS/4122	Pryme Power	45BE	P224G-I/11257	4, 37, 44, 47, 69, 77, 95, 102
NHC-MS/4149	Prime Mover	45BE	P224G-I/11257	18, 37, 44, 47, 69, 95
NHC-MS/4152	Interstate	45BS	P224G-I/11258	4, 44, 47, 85, 95, 103
NHC-MS/4155	Centri Link	45BE	P224G-I/11257	16, 44, 47, 95
NHC-MS/4156	C W Silver	45BT	P224G-I/11260	4, 44, 47, 69, 77, 86, 95, 101
NHC-MS/4193	Interstate	45BT	P224G-I/11260	15, 37, 44, 47, 62, 85, 95, 101
NHC-MS/4194	Pioneer Seed	45BT	P224G-I/11260	34, 44, 47, 48, 69, 77, 86, 95, 101
NHC-MS/4200	Faguy	45BS	P224G-I/11258	1, 15, 16, 19, 44, 47, 69, 85, 95, 102
NHC-MS/4204	Pryme Power	45BE	P224G-I/11257	4, 37, 44, 47, 70, 95, 102, 104
NHC-MS/4209	Charles Machine	45BB	P224G-I/11256	44, 47, 95
NHC-MS/4222	Interstate	45BS	P224G-I/11258	4, 44, 47, 62, 85, 95, 101, 103
NHC-MS/4257	Inland-MB	45BS	P224G-I/11258	4, 44, 47, 85, 95, 103
NHC-MS/4274	Stock	45BE	P224G-I/11257	16, 44, 47, 95
NHC-MS/4293		45BE	P224G-I/11257	4, 15, 44, 47, 95, 102
NHC-MS/4305	Pioneer Seed	45BT	P224G-I/11260	34, 44, 47, 69, 86, 95, 101, 103
NHC-MS/4311	Blalock	45BT	P224G-I/11260	15, 32, 44, 47, 86, 95
NHC-MS/4323	Winter (Redland)	45BS	P224G-I/11258	4, 44, 47, 69, 77, 85, 95
NHC-MS/4331	Pryme Power	45BE	P224G-I/11257	4, 37, 44, 47, 70, 95, 102, 104
NHC-MS/4377	Power Unlimited	45BS	P224G-I/11258	4, 44, 47, 85, 95
NHC-MS/4390	Stock	45BE	P224G-I/11257	4, 44, 47, 61, 95
NHC-MS/4391		45BE	P224G-I/11257	4, 37, 44, 47, 95, 101, 103
NHC-MS/4392	Garlock	45BS	P224G-I/11258	4, 44, 47, 62, 85, 95, 101, 103
NHC-MS/4412	Menge	45BT	P224G-I/11260	4, 44, 47, 86, 95, 102
NHC-MS/4421	Charles Machine	45BB	P224G-I/11256	44, 47, 95
NHC-MS/4423	Repl-Owatonna-1.437	45BE	P224G-I/11257	4, 37, 44, 47, 61, 62, 95
NHC-MS/4424	Repl-Owatonna-1.125	45BB	P224G-I/11256	4, 37, 44, 47, 62, 95, 102
NHC-MS/4427	Repl-Erickson/Ford	45BT	P224G-I/11260	37, 44, 47, 62, 85, 95, 101
NHC-MS/4428	Repl-Hyd Mac,Case/D	45BE	P224G-I/11257	37, 44, 47, 95, 101
NHC-MS/4429	Repl-Pioneer	45BT	P224G-I/11260	4, 44, 47, 69, 77, 86, 95, 101
NHC-MS/4432	Repl, Lightbourn	45BT	P224G-I/11260	4, 44, 47, 69, 77, 86, 95, 101
NHC-MS/4438		45BE	P224G-I/11257	4, 16, 37, 44, 47, 95
NHC-MS/4439	Charles Machine	45BE	P224G-I/11257	15, 44, 47, 95, 101
NHC-MS/4440	Curtis Engine	45BS	P224G-I/11258	4, 44, 47, 85, 95, 103
NHC-MS/4441	Repl - Gehl	45BE	P224G-I/11257	16, 32, 37, 44, 47, 95
NHC-MS/4444	Repl-Hotsy,Cal West	45BE	P224G-I/11257	4, 44, 47, 69, 95, 102

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
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**NHCV**

NHCV-MS/ (ALL)	_____	_____	N/A	Vacu-Flo cooling
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**NHP**

NHP-MS/2973	Advance Machine	45BT
NHP-MS/3179	Blalock	45BE
NHP-MS/3180	Stock	45BE
NHP-MS/3591	Cal West	45BE

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>P216G</b>				
P216G-I/10461	Ingersoll Equip	45BB	P220G-I/10940	13, 22.1, 49, 60, 62.1
P216G-I/10464	Deere -316	45BD	P220G-I/11128	6, 13, 49
P216G-I/10478	Lincoln Electric	45BG	P216G-I/10939	71, 84
P216G-I/10498	Melroe	45BU	P220G-I/11254	13, 22.1, 36, 62, 69, 71, 73, 83, 102
P216G-I/10519	L-TEC(ESAB)	45BF	N/A	
P216G-I/10528	Base Engine - Std	45BB	P220G-I/10940	13, 22.1
P216G-I/10530	Brent, Stock -1.125"	45BB	P220G-I/10940	13
P216G-I/10531	Stock - 1.437"	45BE	P220G-I/10933	13
P216G-I/10538	Toro WH/516-H	45BB	(P216G-I/10976)	13
P216G-I/10552	Stock-9T/SAE A, et al	45BS	P220G-I/11253	8
P216G-I/10556	Miller Electric	45BH	P216G-I/11090	92
P216G-I/10560	Gillette	45BF	N/A	
P216G-I/10562	Base Engine - XSL	45BB	P220G-I/10940	13, 22.1
P216G-I/10605	Whitco	45BE	P220G-I/10933	13, 101
P216G-I/10606	Melroe	45BU	(P216G-I/11110)	No notes
P216G-I/10632	Cummins SW	45BB	P220G-I/10940	13
P216G-I/10645	Wollard	45BB	P220G-I/10940	13, 16, 50, 64, 71, 101
P216G-I/10646	Cyclomatic	45BF	N/A	
P216G-I/10662	Cyclomatic	45BF	N/A	
P216G-I/10666	Van Air Mfg	45BB	P220G-I/10940	13, 64, 100
P216G-I/10671	Stock, Pro-Chem	45BB	P220G-I/10940	13, 70, 71
P216G-I/10691	Toro WH/516-He	45BB	P220G-I/10940	13, 22.1, 71.1, 73, 101
P216G-I/10712	Landa	45BB	P220G-I/10940	13, 100
P216G-I/10720	Base Engine - XSL	45BB	P220G-I/10940	13, 100
P216G-I/10721	Stock - 1.437"	45BE	P220G-I/10933	13
P216G-I/10722	Stock-1.125", et al	45BB	P220G-I/10940	13
P216G-I/10734	Miller Electric	45BH	P216G-I/11090	No notes
P216G-I/10740	Crafco	45BB	P220G-I/10940	13, 22.1, 36, 49, 101, 103
P216G-I/10741	Ingram Kut-Mor	45BT	P220G-I/11255	13, 37, 85
P216G-I/10744	Pro-Chem	45BB	P220G-I/10940	13, 70, 71, 101
P216G-I/10753	Neal Mfg	45BT	P220G-I/11255	13, 22.1, 86
P216G-I/10765	Lincoln Electric	45BG	P216G-I/10939	67, 71
P216G-I/10779	Toro WH/516-H	45BB	(P216G-I/10976)	13
P216G-I/10780	Toro WH/516-He	45BB	P220G-I/10940	13, 22.1, 71.1, 73, 101
P216G-I/10783	Melroe	45BU	(P216G-I/11110)	36
P216G-I/10784	Universal Equip	45BS	P220G-I/11253	8, 13, 36, 49, 64
P216G-I/10788	Pryme Power	45BB	P220G-I/10940	13, 22.1, 103
P216G-I/10796	Huber Repower	45BB	P220G-I/10940	13, 22.1, 49, 71
P216G-I/10797	Ingram Kut-Mor	45BT	P220G-I/11255	8, 13, 22.1, 36, 49, 71, 101
P216G-I/10866	Miller Electric	45BH	P216G-I/11090	67, 71, 92
P216G-I/10874	Mark Ind	45BU	P220G-I/11254	8, 13, 16, 22.1, 49, 70, 71, 101
P216G-I/10888	Base Engine - Std	45BB	P220G-I/10940	13, 22.1
P216G-I/10889	Base Engine - XSL	45BB	P220G-I/10940	13, 22.2
P216G-I/10904	Ingersoll Equip	45BB	P220G-I/10940	13, 22.1, 49, 60, 62.1
P216G-I/10911	Hotsy	45BB	P220G-I/10940	13, 16, 22.1, 52, 70, 71, 101
P216G-I/10926	Repower Specialists	45BC	N/A	

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
P216G-I/10939	Repl Eng - Lincoln	45BG	Same	
P216G-I/10952	Steiner - ZTR	45BB	P220G-I/10940	13, 22.1, 30.1, 36, 49, 69, 71, 73
P216G-I/10957	Toro WH/316-8e'90	45BB		
P216G-I/10975	Melroe	45BU	(P216G-I/11110)	36
P216G-I/10976	Toro WH/416-8 & H	45BB	(P216G-I/10976)	
P216G-I/11000	Hobart	45BF	(P216G-I/11199)	No notes
P216G-I/11007	Repower Specialists	45BC	N/A	
P216G-I/11051	C M Fabrication	45BB	P220G-I/10940	13, 70, 101, 104
P216G-I/11077	Miller Electric	45BH	P216G-I/11090	92
P216G-I/11083	Lincoln Electric	45BG	P216G-I/10939	71
P216G-I/11090	Repl Eng - MILLER	45BH	Same	92
P216G-I/11105	Wacker Corp	45BS	P220G-I/11253	13, 49
P216G-I/11110	Melroe	45BU	(P216G-I/11110)	
P216G-I/11122	Steam Genie	45BB	P220G-I/10940	13, 62, 70, 101, 104, 105
P216G-I/11132	Lincoln Electric	45BF	(P216G-I/11132)	
P216G-I/11145	Whitco	45BE	P220G-I/10933	13, 62, 101
P216G-I/11156	Landa	45BB	P220G-I/10940	13, 49, 62, 101, 103
P216G-I/11191	Steam Genie	45BB	P220G-I/10940	13, 70
P216G-I/11199	Hobart	45BF	(P216G-I/11199)	
P216G-I/11201	Pro-Chem	45BB	P220G-I/10940	13, 70, 71, 101
P216G-I/11204	Steiner	45BB	P220G-I/10940	13, 22.1, 69, 71, 83, 105
P216G-I/11206	Whitco	45BE	P220G-I/10933	13, 62, 73, 101
P216G-I/11208	Dunlite Power	45BF	N/A	
P216G-I/11213	Motores Stork	45BF	N/A	
P216G-I/11224	Steiner Turf	45BB	P220G-I/10940	13, 22.1, 56, 69, 71, 73
P216G-I/11251	Stock - 1.125"	45BB	P220G-I/10940	13
P216G-I/11252	Stock - 1.437"	45BE	P220G-I/10933	13
P216G-I/11253	Stock - 9T Int Spline	45BS	P220G-I/11253	No notes
P216G-I/11254	Stock - 11T Int Spline	45BU	P220G-I/11254	No notes
P216G-I/11255	Stock - 13T Int Spline	45BT	P220G-I/11255	No notes
P216G-I/11280	Miller Electric	45EE	(P216G-I/11280)	
P216G-I/11291	HWA-Chang Trading	45BB	P220G-I/10940	13, 49, 70, 101, 104
P216G-I/11305	Cum-Mid Canada	45BB	P220G-I/10940	13, 101, 104
P216G-I/11337	HWA-Chang Trading	45BB	P220G-I/10940	13, 30.1, 49, 62, 70, 101, 104
P216G-L/11192	Miller Electric	45BH	P216G-I/11090	106
P216G-L/11273	Lincoln	45BF	(P216G-L/11273)	
P216G-L/11281	Miller Electric	45EE	(P216G-L/11281)	

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>P216V</u></b>				
P216V-I/10730	Stock	45DV		
P216V-I/10869	Dyna-Tech	45DV		LP carb
P216V-I/10873	Toro WH/616-Z '89	45DV		Do not use 18/20 HP repl engine
P216V-I/10893	Stock	45DV	P220V-I/10893	No notes
P216V-I/10959	Toro WH/616-Z '90	45DV		Do not use 18/20 HP repl engine
P216V-I/11103	Toro WH/616-Z	45DV		Do not use 18/20 HP repl engine

<sup>1</sup> For PTO stub description, see Appendix A.



ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>P218G</b>				
P218G-I/10461	Ingersoll Equip	45BB	P220G-I/10940	22.1, 49, 60, 62.1, 71.3
P218G-I/10462	Deere - 316 & 318	45BD	P220G-I/11128	6, 49
P218G-I/10530	Stock - 1.125"	45BB	P220G-I/10940	13
P218G-I/10531	Stock - 1.437"	45BE	P220G-I/10933	13
P218G-I/10539	Toro WH/518-H	45BB	P220G-I/10940	13, 22.1, 36.1, 73, 71.1, 101
P218G-I/10550	J I Case	45BH	(P218G-I/11227)	No notes
P218G-I/10551	Stock - 13T/SAE B	45BT	P220G-I/11255	86
P218G-I/10552	Stock - 9T/SAE A	45BS	P220G-I/11253	8
P218G-I/10557	Miller Electric	45BH	(P218G-I/10868)	No notes
P218G-I/10605	Whitco	45BE	P220G-I/10933	13, 101
P218G-I/10608	Deere - (JD317)	45BD	(P218G-I/10608)	81
P218G-I/10630	Lincoln Electric	45BG	(P218G-I/10867)	No notes
P218G-I/10641	Ford-New Holland	45BH		
P218G-I/10674	Sweepster(Stndby Pwr)	45BS	P220G-I/11253	13, 22.1, 52, 70, 85, 104
P218G-I/10675	Bunton	45BB	P220G-I/10940	13, 71, 101
P218G-I/10676	American Yard	45BB		
P218G-I/10692	Toro WH/518-He'89	45BB	P220G-I/10940	13, 22.1, 36.1, 71.1, 73, 101
P218G-I/10698	Equipment Service	45BS		
P218G-I/10701	Genie Ind (Frmnt Elec)	45BB	P220G-I/10940	13, 30.1, 70, 71, 107
P218G-I/10709	Prime Mover	45CC	P220G-I/11255	37, 69, 71, 73, 79, 100
P218G-I/10714	M & W Gear	45BB		
P218G-I/10721	Stock - 1.437", Landa	45BE	P220G-I/10933	13
P218G-I/10722	Stock - 1.125"	45BB	P220G-I/10940	13
P218G-I/10725	Stock - 13T/SAE B	45BT	P220G-I/11255	9, 13
P218G-I/10735	Miller Electric	45BH	(P218G-I/10868)	92
P218G-I/10742	Ingersoll Equip	45BC	(P218G-I/10905)	No notes
P218G-I/10756	Genie Ind	45BB	P220G-I/10940	13, 16, 30.1, 56, 70, 71, 108
P218G-I/10788	Pryme Power	45BB		
P218G-I/10791	EDCO (Curtis Eng)	45BE	P220G-I/10933	13, 22.1, 37, 71
P218G-I/10821	Wilke Mfg	45BS	P220G-I/11253	8, 70, 101, 104
P218G-I/10830	Cal West Electric	45BT	P220G-I/11255	8
P218G-I/10832	Miller Electric	45BH		
P218G-I/10844	Calavar	45BS	P220G-I/11253	8, 13, 16, 49, 62, 70, 100, 101
P218G-I/10845	Zonge Engineering	45BB		
P218G-I/10857	Hobart	45BF	(P218G-I/11199)	No notes
P218G-I/10862	Lesco	45BC		
P218G-I/10867	Lincoln Electric	45BG	(P218G-I/10867)	
P218G-I/10868	Miller Electric	45BH	(P218G-I/10868)	92
P218G-I/10876	NF-2 Floodlighter	45CE		
P218G-I/10877	Ford-New Holland	45BH	P220G-I/11255	13, 50, 60, 62, 73, 79, 83
P218G-I/10882	L_TEC (ESAB)	45BF	N/A	Crnkshft not serviced with rpl eng
P218G-I/10897	Zonge Engrg (C-SW)	45BB		
P218G-I/10898	Calavar	45BS	P220G-I/11253	8, 13, 16, 49, 62, 70, 101
P218G-I/10904	Ingersoll Equip	45BB	P220G-I/10940	13, 22.1, 49, 60, 62.1
P218G-I/10905	Ingersoll Equip	45BC	(P218G-I/10905)	
P218G-I/10907	T & J Mfg	45BF	N/A	Crnkshft not serviced with rpl eng

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
P218G-I/10920	Thermo King	45BD	(P218G-I/10920)	
P218G-I/10924	Repl Eng-Miller/Lincoln	45CE	(P218G-I/10924)	
P218G-I/10930	Repl Eng-Gravely	45CA	Same	
P218G-I/10936	Repl Eng-Case/Ingersoll	45BC	Same	
P218G-I/10937	Repl Eng-MILLER	45BH	Same	92
P218G-I/10958	Toro WH/518-He'90	45BB	P220G-I/10940	13, 22.1, 36.1, 68, 71.1, 73, 101
P218G-I/10994	Zonge Engrg (C-SW)	45BB	P220G-I/10940	13, 22.1, 36, 49, 70, 101, 104
P218G-I/11004	Sweepster(Stnby Pwr)	45BS	P220G-I/11253	8, 13, 22.1, 51.2, 70, 104
P218G-I/11006	MB Corp	45BS	P220G-I/11253	8, 37, 50, 100, 101, 103
P218G-I/11056	Grove Crane	45BT	P220G-I/11255	9, 13, 37, 73
P218G-I/11075	Doskocil	45EA	N/A	Crmkshft not serviced with rpl eng
P218G-I/11076	Ford-New Holland	45BH	P220G-I/11255	13, 28, 50, 60, 62, 73, 79, 83,100
P218G-I/11081	Deere - Horicon (318)	45BD	P220G-I/11128	6, 49
P218G-I/11108	Grove Crane	45BT	P220G-I/11255	9, 13, 37, 54, 73
P218G-I/11113	MB Corp	45BS	P220G-I/11253	8, 37, 49, 100, 101, 103
P218G-I/11126	Allen Engineering	45BE	P220G-I/10933	13, 49, 62, 64, 70, 101, 104
P218G-I/11140	Miller Electric	45BH	(P218G-I/11140)	
P218G-I/11145	Whitco (C-Mid So)	45BE	P220G-I/10933	13, 62, 101
P218G-I/11147	Whiteman Ind	45BB	P220G-I/10940	13, 62, 70, 73, 83, 101, 105, 109
P218G-I/11149	J I Case-Svc Parts	45BB	P220G-I/10940	13, 22.1, 29, 37, 62, 71, 101
P218G-I/11154	Lesco	45CC	P220G-I/11255	13, 22.1, 37, 49, 69, 73, 83,71,79
P218G-I/11161	MB Corp	45BS	P220G-I/11253	37, 49, 70, 100, 101, 104, 110
P218G-I/11174	I.C.C./Belgium	45BB		
P218G-I/11198	Lincoln Electric	45BF	N/A	Crmkshft not serviced with rpl eng
P218G-I/11199	Hobart	45BF	(P218G-I/11199)	
P218G-I/11211	Whiteman	45BB	P220G-I/10940	13,28,49,62, 70, 73, 83, 101, 109
P218G-I/11215	Melroe	45BB		
P218G-I/11220	Lincoln	45ED	(P218G-I/11220)	
P218G-I/11227	J I Case	45BH	(P218G-I/11227)	
P218G-I/11251	Stock-1.125"	45BB	P220G-I/10940	13
P218G-I/11252	Stock-1.437"	45BE	P220G-I/10933	13
P218G-I/11253	Stock-9T Spline	45BS	P220G-I/11253	No notes
P218G-I/11254	Stock-11T Spline	45BU	P220G-I/11254	No notes
P218G-I/11255	Stock-13T SPL	45BT	P220G-I/11255	No notes
P218G-I/11291	HWA-Chang Trad Co	45BB	P220G-I/10940	13, 49, 70, 101, 104
P218G-I/11293	Cummins-South	45BT	P220G-I/11255	64, 70, 110
P218G-I/11305	Cummins-Mid Canada	45BB	P220G-I/10940	13, 101, 103
P218G-I/11337	HWA-Chang Trad Co	45BB	P220G-I/10940	13, 49, 62, 70, 101, 104
P218G-I/11354	Cummins-No Illinois	45BB	P220G-I/10940	13, 16, 22.1, 49, 70, 97, 101
P218G-L/11180	Miller Electric	45BH	(P218G-L/11180)	
P218G-L/11193	Miller Electric	45BH	(P218G-L/11193)	

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>P218V</u></b>				
P218V-I/10864	Bunton	45DV	P220V-I/10893	69, 71
P218V-I/10869	Dyna-Tech	45DV	N/A	LP Carb
P218V-I/10893	Stock	45DV	P220V-I/10893	No notes

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>P220G</b>				
P220G-D/11216	Stock - 1.125"	45BB		
P220G-I/10461	Ingersoll Equip	45BB	P220G-I/10940	13, 22.1, 49, 60, 62.1
P220G-I/10462	Deere - 420	45BD	P220G-I/11128	6, 13, 49
P220G-I/10463	Deere - F910	45BD	P220G-I/11128	13, 29, 36, 49, 109, 112
P220G-I/10488	Jacobsen	45BB	P220G-I/10931	13, 22.1, 37, 49
P220G-I/10509	Wood-Mizer	45BB	P220G-I/10940	13, 16, 64
P220G-I/10530	Stock - 1.125"	45BB	P220G-I/10940	13
P220G-I/10531	Stock - 1.437"	45BE	P220G-I/10933	13
P220G-I/10540	Toro Wh/520-H '89	45BB	(P220G-I/10955)	No notes
P220G-I/10541	Toro WH/520-He '89	45BB	(P220G-I/10955)	No notes
P220G-I/10543	Toro WH/	45BB		
P220G-I/10551	Stock - 13T/SAE B	45BT	P220G-I/11255	86
P220G-I/10561	Steiner Tractor	45BB	P220G-I/10940	13, 22.1, 49, 73, 83, 71
P220G-I/10596	Comet Ind	45BB		
P220G-I/10601	Toro-Kansas (Olathe)	45BB	P220G-I/10940	13, 103
P220G-I/10648	Crafco (C-SW)	45BT	P220G-I/11255	9, 13, 101, 103
P220G-I/10649	Gehl	45BB	P220G-I/10940	13, 37, 52, 60, 71
P220G-I/10665	Toro	45BB		
P220G-I/10670	Neal Mfg	45BT	P220G-I/11255	8
P220G-I/10676	American Yard/Sears	45BB	P220G-I/10940	13, 22.1, 71, 73, 80.1, 105
P220G-I/10678	Morebark	45BE		
P220G-I/10714	M & W Gear	45BB	P220G-I/10940	13, 49, 71, 73, 83, 100
P220G-I/10721	Stock - 1.437"	45BE	P220G-I/10933	13
P220G-I/10722	Stock - 1.125"	45BB	P220G-I/10940	13
P220G-I/10725	Stock - 13 T/SAE B	45BT	P220G-I/11255	9
P220G-I/10731	Cummins Southwest	45BB	P220G-I/10940	13, 50, 70, 71
P220G-I/10740	Crafco (C-SW)	45BB	P220G-I/10940	13, 22.1, 36, 49, 101, 103
P220G-I/10748	Scott Air (C-SW)	45BB	P220G-I/10940	13, 29, 49, 71
P220G-I/10759	Energyx	45BF	(P220G-I/10790)	No notes
P220G-I/10776	Repl - Deere	45BE		
P220G-I/10782	E-Z-Go	45BP	(P220G-I/11212)	113
P220G-I/10788	Pryme Power	45BB	P220G-I/10940	13, 22.1, 103
P220G-I/10790	Energx	45BF	(P220G-I/10790)	No notes
P220G-I/10808	Toro/Groundsmaster	45BJ	P220G-I/10932	13, 40, 50
P220G-I/10815	Deere Repl	45BE	P220G-I/10935	13
P220G-I/10830	Heinrichs (Cal West)	45BT		
P220G-I/10832	Miller Electric	45BH	P220G-I/10938	62.1, 92, 114
P220G-I/10889	Base Engine - XSL	45BB	P220G-I/10940	13, 22.1
P220G-I/10896	American Yard/Sears	45BB	P220G-I/10940	22.1, 71, 73, 80.1, 105
P220G-I/10904	Ingersoll Equip	45BB	P220G-I/10940	13, 22.1, 49, 60, 62.1
P220G-I/10906	Ontario Drive & Gear	45BB	P220G-I/10940	13, 73, 83, 64, 71
P220G-I/10927	Repower Specialists	45BC	N/A	
P220G-I/10931	Repl Eng - Jacobsen	45BB	Same	
P220G-I/10932	Repl Eng - Toro	45BJ	Same	
P220G-I/10933	Repl Eng - Industrial	45BE	Same	

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
P220G-I/10934	Repl Eng - Deere	45BD	P220G-I/11128	No Notes
P220G-I/10935	Repl Eng - Deere	45BD	Same	
P220G-I/10938	Repl Eng - Miller	45BH	Same	92
P220G-I/10940	Repl Eng - Turf	45BB	Same	
P220G-I/10941	Repl Eng - 13T Spline	45BT	P220G-I/11255	13, 69
P220G-I/10942	Repl Eng - 11T Spline	45BU	P220G-I/11254	13, 69
P220G-I/10943	Repl Eng - 9T Spline	45BS	P220G-I/11253	13, 69
P220G-I/10944	Repl Eng - E-Z-GO	45BP	Same	
P220G-I/10945	Crafco	45BT	P220G-I/11255	9, 13, 49, 62, 70, 101, 104
P220G-I/10952	Steiner - ZTR	45BB	P220G-I/10940	13, 22.1, 30.1, 36, 49, 71, 73
P220G-I/10955	Toro WH/520-H	45BB	(P220G-I/10955)	
P220G-I/10956	Toro WH/520-8 '90	45BB	(P220G-I/10955)	No notes
P220G-I/11003	Kut Kwick	45BD	P220G-I/10933	2, 13, 28, 30.1, 36, 50, 73
P220G-I/11007	Repower Specialists	45BC	N/A	
P220G-I/11017	Crafco	45BT	P220G-I/11255	9, 13, 49, 62, 70, 101, 104, 107
P220G-I/11031	Foremost	45BB	P220G-I/10940	13
P220G-I/11040	Crafco	45BT	P220G-I/11255	9, 13, 51.2, 62, 70, 101, 104
P220G-I/11054	American Yard/Sears	45BB	P220G-I/10940	22.1, 73, 80.1, 105
P220G-I/11065	Steam Genie	45BB	P220G-I/10940	13, 54, 70, 101, 104
P220G-I/11069	Thermo King	45BD		
P220G-I/11072	Moridge Mfg	45BB	P220G-I/10940	13, 49, 73
P220G-I/11075	Doskocil	45EA	(P220G-I/11075)	
P220G-I/11081	Deere - (420)	45BD	P220G-I/11128	6, 49
P220G-I/11082	Deere - (F910)	45BD	P220G-I/11128	29, 36, 49, 109, 112
P220G-I/11088	Intl Digging Mach	45CC		
P220G-I/11089	Allen Engrg(C-Mid So)	45BE	P220G-I/10933	13, 49, 62, 64, 101, 103
P220G-I/11091	Hydramaster	45BE	P220G-I/10933	13, 30.1, 70
P220G-I/11093	Steiner - ZTR	45BB	P220G-I/10940	13, 22.1, 30.1, 36, 56, 71, 73
P220G-I/11106	Steiner - ZTR	45BB	P220G-I/10940	13, 22.1, 30.1, 36, 71, 73
P220G-I/11112	E-Z-Go(Replacement)	45BP		
P220G-I/11120	Intl Digging Mach	45CC	P220G-I/11255	13, 22.1, 49, 70, 73, 83, 79
P220G-I/11124	Moridge Mfg.	45BB	P220G-I/10940	13, 28, 49, 73, 80.1
P220G-I/11126	Allen Engineering	45BE	P220G-I/10933	13, 49, 62, 64, 70, 101, 104
P220G-I/11128	Repl Eng - Deere	45BD	Same	
P220G-I/11134	Hydramaster	45BE	P220G-I/10933	13, 16, 30.1, 70
P220G-I/11135	Miller Electric	45BH	P220G-I/10938	62.1, 115
P220G-I/11137	Hako-Werke	45BD		
P220G-I/11153	Steam Genie	45BB	P220G-I/10940	13, 30.1, 54, 70, 101, 104
P220G-I/11159	Foremost	45BB	P220G-I/10940	13, 51.2, 103
P220G-I/11160	E-Z-Go	45BP	(P220G-I/11212)	113
P220G-I/11162	Steiner - Tractor	45BB	P220G-I/10940	13, 22.1, 36, 49, 71, 73, 83
P220G-I/11163	Pryme Power	45BU	P220G-I/11254	13, 69, 71, 111
P220G-I/11169	Crafco	45BT	P220G-I/11255	13, 51.2, 62, 70, 101, 104, 106, 111
P220G-I/11174	I.C.C./Belgium	45BB		
P220G-I/11178	Steam Genie	45BB	P220G-I/10940	13, 30.1, 70, 101, 104, 105
P220G-I/11182	Crafco	45BB	P220G-I/10940	13, 22.1, 36, 49, 70, 101, 104, 109
P220G-I/11186	Mustang Mfg	45BB	P220G-I/10940	13, 28, 30.1, 62, 64, 101, 116
P220G-I/11203	Thermo King	45BD		

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
P220G-I/11212	E-Z-GO	45BP	(P220G-I/11212)	
P220G-I/11218	Toro (Olathe)	45BB	P220G-I/10940	13, 103
P220G-I/11249	Repl Eng - Cub Cadet	45BB	Same	
P220G-I/11251	Stock - 1.125"	45BB	P220G-I/10940	13
P220G-I/11252	Stock - 1.437"	45BE	P220G-I/10933	13
P220G-I/11253	Stock/Repl - 9T Spl	45BS	Same	
P220G-I/11254	Stock/Repl - 11T Spl	45BU	Same	
P220G-I/11255	Stock/Repl - 13T Spl	45BT	Same	
P220G-I/11274	Cum - NW	45BE	P220G-I/10933	13, 16, 28, 30.1, 75, 97
P220G-I/11291	HWA-Chang Trad Co	45BB	P220G-I/10940	13, 49, 70, 101, 104
P220G-I/11302	Cum - Onan Power	45BS	P220G-I/11253	64
P220G-I/11305	Cum - Mid-Canada	45BB	P220G-I/10940	13, 101, 103
P220G-I/11313	Fern AB	45BB	P220G-I/10940	13, 30.1
P220G-I/11337	HWA-Chang Trad Co	45BB	P220G-I/10940	13, 30.1, 49, 62, 70, 101, 104
P220G-L/11277	Miller Electric	45BH	P220G-I/10938	106, 115

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>P220V</u></b>				
P220V-I/10730	Stock, Ferris Ind	45DV		
P220V-I/10864	Bunton	45DV	P220V-I/10893	69, 71
P220V-I/10892	Base Engine - XSL	45DV		
P220V-I/10893	Stock	45DV	Same	
P220V-I/10899	Excel Ind	45DV		
P220V-I/11023	Dixon Industries	45DV	P220V-I/10893	13, 117
P220V-I/11024	Gravely	45DV	P220V-I/10893	13, 69, 71, 101, 117
P220V-I/11064	Ferris Ind	45DV	P220V-I/10893	101
P220V-I/11104	Toro WH/620-Z	45DV	P220V-I/10893	13, 28, 101, 118
P220V-I/11209	Bunton	45DV	P220V-I/10893	69, 71, 101
P220V-I/11328	American Yard Prod	45DV		

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b>P224G</b>				
P224G-I/10705	Sullair	45BB	P224G-I/11256	13, 44, 70, 71, 83
P224G-I/10708	Flaherty Equip	45BS	P224G-I/11258	8, 13, 44, 101, 103
P224G-I/10710	Midwestern Power	45BB	P224G-I/11256	No notes
P224G-I/10713	Cums Sw (Prochem)	45BB		
P224G-I/10726	Stock	45BE	P224G-I/11257	No notes
P224G-I/10727	Stock	45BT	P224G-I/11260	9
P224G-I/10813	Gravely	45BY	N/A	
P224G-I/10814	Steiner Corp	45BB	P224G-I/11256	13, 36, 45, 69, 71, 73, 83
P224G-I/10825	Stannard Power	45BB	P224G-I/11256	64, 70
P224G-I/10828	Olathe Mfg Co	45BB		
P224G-I/10829	Fremont Elc (Genie)	45BT		
P224G-I/10833	Kut Kwick	45BD	P224G-I/11257	2, 13, 37, 69, 73
P224G-I/10834	Flaherty (Schweiss)	45BB	P224G-I/11256	13, 37, 69, 71, 73
P224G-I/10837	Cummins Sw (Crafco)	45BB		
P224G-I/10838	Mauldin Mfg Co	45BT		
P224G-I/10841	Simsom Max (Canatr	45BD		
P224G-I/10842	Meco-W M (McDonal	45BB	P224G-I/11256	13, 22, 46
P224G-I/10843	Dixie Chopper	45BT		
P224G-I/10875	Ransomes (XT4005)	45BE	P224G-I/11257	13,28,37, 40, 43, 60, 62, 69, 72, 73
P224G-I/10890	Base Engine	45BB	P224G-I/11256	13
P224G-I/10909	Curtis Equip (Edco)	45BE		
P224G-I/10912	Target	45BE	P224G-I/11257	13, 36, 60, 70, 101, 104
P224G-I/10913	T & J Mfg.	45BF	N/A	
P224G-I/10922	Charles Machine	45BB	P224G-I/11256	13, 22, 44
P224G-I/10925	Cummins Sw Inc	45BB	P224G-I/11256	13, 15, 36, 62, 101, 103
P224G-I/10966	Toro/Whl Horse	45BB	(P224G-I/10966)	
P224G-I/10967	Zonge (C-SW)	45BB	P224G-I/11256	13, 36, 42.1, 43, 70, 101, 104
P224G-I/10987	Mark Ind.	45BU	P224G-I/11259	8, 13, 16, 70, 71, 101
P224G-I/10999	Toro	45BD		
P224G-I/11014	J A Faguy & Sons	45BT	P224G-I/11260	8, 13, 28, 44, 69
P224G-I/11021	Olathe Mfg.Co.	45BB		Spl 3 lead harness
P224G-I/11022	Morbark Ind.	45BE	P224G-I/11257	83
P224G-I/11025	Cummins Mid South	45BE	P224G-I/11257	13, 70
P224G-I/11029	Stannard Power	45BB	P224G-I/11256	36, 62, 70, 73, 101
P224G-I/11041	McDonald Equip	45BB		
P224G-I/11043	Cummins Southwest	45BB	P224G-I/11256	13, 37, 62, 101, 103
P224G-I/11050	Cummins Mid-South	45BT	P224G-I/11260	9, 13, 70, 102
P224G-I/11057	Midwestern Power	45BS	P224G-I/11258	8, 13, 101, 103
P224G-I/11066	Simon Aerial	45BB		Spl 3 lead harness
P224G-I/11070	Ferm Ab	45BB		
P224G-I/11087	Ferm Ab	45BB		
P224G-I/11092	Hydramaster	45BE	P224G-I/11257	70, 101
P224G-I/11109	Hydramaster	45BE	P224G-I/11257	16, 70
P224G-I/11111	Lift-A-Loft (Meco)	45BS	P224G-I/11258	8, 13, 16, 44, 64, 75
P224G-I/11115	John Deere Tech Ctr	45BB		
P224G-I/11116	Morley Murphey (S-A)	45BB	P224G-I/11256	62, 75, 101

<sup>1</sup> For PTO stub description, see Appendix A.



ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
P224G-I/11117	Harrison Equip Co.	45BE		
P224G-I/11119	Hobart	45BF	N/A	
P224G-I/11125	Abiff (Gen Pwr)	45BE	P224G-I/11257	44
P224G-I/11133	Flaherty	45BB	P224G-I/11256	44, 62, 70, 101, 104
P224G-I/11138	Cum-Mid South	45BE	P224G-I/11257	13, 64, 70
P224G-I/11146	Whiteman Ind	45BB	P224G-I/11256	13, 22, 62, 70, 73, 83, 101, 109
P224G-I/11150	Prochem (C-Sw)	45BB	P224G-I/11256	62, 75, 101
P224G-I/11151	Boss Industries	45CC	N/A	
P224G-I/11155	Faguy	45BT	P224G-I/11260	8, 13, 37, 44, 69
P224G-I/11157	Landa	45BB	P224G-I/11256	13, 16, 22, 44, 62, 101
P224G-I/11158	Coast Machine	45BT	P224G-I/11260	9, 13, 101
P224G-I/11166	Landa	45BB	P224G-I/11256	13, 16, 22, 44, 62, 101
P224G-I/11167	Toro (Olathe)	45BB		6 hole block
P224G-I/11168	Bunton	45BB	P224G-I/11256	22, 37, 69, 71
P224G-I/11175	Pioneer Hi-Bred	45BT	P224G-I/11260	9, 44, 70, 101, 104
P224G-I/11181	Crafco (C-Sw)	45BB	P224G-I/11256	13, 37, 62, 70, 101, 104, 109
P224G-I/11183	Ransomes	45BE	P224G-I/11257	13, 28, 37, 40, 42, 1, 43, 60, 62, 69, 72, 73
P224G-I/11184	Prochem (C-Sw)	45BB	P224G-I/11256	62, 70, 101
P224G-I/11185	Mustang Mfg	45BB	P224G-I/11256	36, 44, 64, 69, 101, 109
P224G-I/11189	Genie rpl (Keystone)	45BT	P224G-I/11260	9, 16, 62, 64, 75, 101
P224G-I/11194	Doskocil	45EA	(P224G-I/11194)	
P224G-I/11200	Prochem	45BB	P224G-I/11256	62, 70, 101
P224G-I/11202	Deines Corp	45BE	P224G-I/11257	13, 29, 62, 65, 69, 101
P224G-I/11210	Whiteman Ind	45BB	P224G-I/11256	13, 22, 28, 62, 70, 73, 83, 101, 109
P224G-I/11214	T & J	45BF	(P224G-I/11214)	
P224G-I/11219	Toro (Olathe)	45BB	(P224G-I/11219)	6 hole block
P224G-I/11222	ODC	45BB	P224G-I/11256	70
P224G-I/11223	Ontario Drv & Gear	45BB	P224G-I/11256	3, 13, 19, 28, 64, 69, 109
P224G-I/11225	Cum-Mid South	45BE	P224G-I/11257	13, 62, 64, 70, 101, 104
P224G-I/11228	Simon Aerial (Mor Mu	45BB	P224G-I/11256	62, 75, 101
P224G-I/11229	Meco-Wood Mizer	45BB	P224G-I/11256	13, 22, 46
P224G-I/11256	Stock/Rpl - 1.12"	45BB	Same	
P224G-I/11257	Stock/Rpl - 1.44"	45BE	Same	
P224G-I/11258	Stock/Rpl - 9T	45BS	Same	
P224G-I/11259	Stock/Rpl - 11T	45BU	Same	
P224G-I/11260	Stock/Rpl - 13T	45BT	Same	
P224G-I/11275	Hydramaster	45BE	P224G-I/11257	16, 28, 75, 97
P224G-I/11278	Meco-Wood Mizer	45BB	P224G-I/11256	13
P224G-I/11289	Toro	45BD	(P224G-I/11289)	
P224G-I/11292	HWA-Chang Trad	45BB	P224G-I/11256	70, 101, 104
P224G-I/11295	Meco-Wood Mizer	45BB	P224G-I/11256	13, 101
P224G-I/11306	Cum-Mid Canada	45BE	P224G-I/11257	101, 103
P224G-I/11314	SML	45BF	(P224G-I/11314)	
P224G-I/11318	Faguy	45BT	P224G-I/11260	8, 13, 28, 37, 44, 64, 70
P224G-I/11331	Hydramaster	45BE	P224G-I/11257	28, 75
P224G-I/11338	HWA-Chang Trad	45BB	P224G-I/11256	62, 70, 101, 104

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
<b><u>RCCK</u></b>				
RCCK (ALL)			N/A	
<b><u>T260G</u></b>				
T260G-GA024/3851	Roper/Sears	45BB	N/A	
T260G-GA024/3974	Ransomes	45BB	N/A	
T260G-GA024/3991	Stock, et al	45BB	P224G-I/11256	99; 5, 15, 44, 47
T260G-GA024/4033	Hahn Mfg	45BT	P224G-I/11260	99; 1, 5, 8, 15, 17, 28, 44, 47
T260G-GA024/4039	Spirit	45BU	P224G-I/11259	99; 5, 9, 15, 44, 47, 73
T260G-GA024/4065	Ransomes	45BB	N/A	
T260G-GA024/4148	Mobil Drilling	45BT	P224G-I/11260	99; 5, 9, 15, 17, 44, 47, 73
T260G-GA024/4186	Roper/Sears	45BB	N/A	
T260G-GA024/4187	Ransomes	45BF	N/A	
T260G-GA024/4228	Deere - F930	45BE	N/A	
T260G-GA024/4255	Deere - F930	45BE	N/A	
T260G-GA024/4258	Craven Tasker	45BT		
T260G-GA024/4266	Standby Power	45BB	N/A	
T260G-GA024/4268	Stock	45BE	P224G-I/11257	99; 5, 15, 43, 47
T260G-GA024/4274	Base Engine	45BB	P224G-I/11256	99; 5, 15, 44, 47
T260G-GA024/4275	Deere - F930	45BE	N/A	
T260G-GA024/4281	Steiner	45BB	N/A	
T260G-GA024/4285	Ransomes	45BF	N/A	
T260G-GA024/4286	Maritime	45BU	P224G-I/11259	99; 5, 9, 15, 44, 73
T260G-GA024/4290	Comet	45BB	N/A	
T260G-GA024/4308	Belco Ind	45BB	N/A	
T260G-GA024/4330	Deere - F930	45BE	N/A	
T260G-GA024/4333	Peel Engine	45BT	P224G-I/11260	99; 5, 8, 37, 40, 44, 47
T260G-GA024/4337	Meco (Dixie Choppr)	45BT	N/A	
T260G-GA024/4338	Ingram Kut-Mor	45BE	N/A	
T260G-GA024/4342	Ingram Kut-Mor	45BE	N/A	
T260G-GA024/4345	Ingram Kut-Mor	45BT	N/A	
T260G-GA024/4361	Meco (Dixie Choppr)	45BT	N/A	
T260G-GA024/4362	Lightbourn	45BE	N/A	
T260G-GA024/4371	Sullair	45BB	N/A	
T260G-GA024/4382	Kut Kwick	45BE	N/A	
T260G-GA024/4383	Interstate	45BB	N/A	
T260G-GA024/4394	Stock	45BB	P224G-I/11256	99; 5, 15, 47
/4394	Genie, Simon Aerial	45BB	P224G-I/11256	99; 15, 43, 47
/4394	Toro (Olathe)	45BB	N/A	
T260G-GA024/4395	Deere - F930	45BE	N/A	
T260G-GA024/4398	Furatell	45BT	P224G-I/11260	99; 5, 9, 42.1, 43, 47, 69
T260G-GA024/4402	Kut Kwick	45BE	N/A	
T260G-GA024/4403	Asplundh	45BE	N/A	
T260G-GA024/4404	Whl Horse-724Z	45BB	(P224G-I/10966)	98
T260G-GA024/4406	Lesco - 500	45BF	N/A	

<sup>1</sup> For PTO stub description, see Appendix A.

ORIGINAL ENGINE MODEL	CUSTOMER (REF)	CRANK SHAFT <sup>1</sup>	REPLACEMENT ENGINE MODEL	NOTES (INCL KITS NEEDED) SEE APPENDIX B
T260G-GA024/4408	Cyclomatic	45BF	N/A	
T260G-GA024/4410	Lightbourn	45BE	N/A	
T260G-GA024/4414	Sweepster	45BT	P224G-I/11260	99; 4, 5, 8, 44, 47, 69
T260G-GA024/4415	Mecolec	45CB	N/A	
T260G-GA024/4419	Meco (Dixie Choppr)	45BT	N/A	
T260G-GA024/4422	Standby Power	45BB	N/A	
T260G-GA024/4425	Stock, Morbark, Canter	45BE	P224G-I/11257	99; 5, 15, 47
T260G-GA024/4437	Belco	45BB	N/A	
T260G-GA024/4442	Grimmer Schmidt	45BB	N/A	
T260G-GA024/4448	Wood-mizer (Dplcrvr)	45BB	N/A	Contact Wood-mizer for P224G rpl eng
T260G-GA024/4450	Comet	45BE	N/A	
T260G-GA024/4451	Crafco	45BB	N/A	
T260G-GA024/4453	Elephant Ind	45BS	P224G-I/11258	99; 5, 8, 15, 44, 47
T260G-GA024/4454	N A O	45BS	P224G-I/11258	99; 5, 8, 15, 44, 47, 69
T260G-GA024/4471	C T L Corp	45BE	N/A	
T260G-GA024/4472	Olathe Mfg	45BB	N/A	
T260G-GA024/4473	N A O	45BS	P224G-I/11258	99; 5, 8, 15, 44, 47, 69
T260G-GA024/4474	Crafco	45BB	N/A	
T260G-GA024/4475	Grimmerschmidt	45CC	N/A	
T260G-GA024/4476	Kut-Kwick	45BE	N/A	
T260G-GA024/4485	Genie	45BB	P224G-I/11256	99; 16, 47, 70
T260G-GA024/4487	McDonald(Dixie Chpr)	45BT	N/A	
T260G-GA024/4488	Genie	45BT	P224G-I/11260	99; 9, 16, 47, 64, 70
T260G-GA024/4489	Genie	45BB	P224G-I/11256	99; 16, 20, 47, 70
T260G-GA024/4490	Wood-Mizer	45BB	N/A	Contact Wood-mizer for P224G rpl eng
T260G-GA024/4491	Genie	45BT	P224G-I/11260	99; 9, 16, 20, 47, 64, 70
T260G-GA024/4492	Genie	45BB	P224G-I/11256	99; 16, 20, 47, 70

<sup>1</sup> For PTO stub description, see Appendix A.

Crankshaft PTO Stub (Ref)<sup>1</sup>

Sales Code	Type	Dia (in.)	TRFB <sup>2</sup> (in.)	TFS <sup>3</sup> (in.)	Internal Thread	Taper/Key Teeth
45BB	Straight	1.12	3.95	2.74	3/8-24	0.25 Sq
45BC	Straight	1.12	2.27	1.06	3/8-24	0.25 Sq
45BD	Straight	1.44	3.77	2.62	3/8-24	0.38 Sq
45BE	Straight	1.44	3.99	3.06	3/8-24	0.38 Sq
45BF	Taper	1.12	3.12	1.51	7/16-14	2.25 T
45BG	Taper	1.12	4.97	4.04	3/8-24	2.25 T
45BH	Taper	1.12	2.18	1.25	5/16-24	1.50 T
45BJ	Taper	1.12	2.55	1.50	7/16-14	2.25 T
45BP	Straight	1.50	2.74	1.81	None	#18 Wdrf
45BR	Straight	1.12	3.75	2.54	3/8-24 <sup>4</sup>	0.25 Sq
45BS	Spline	1.62	1.27	1.10	None	9T Int
45BT	Spline	1.62	1.27	1.10	None	13T Int
45BU	Spline	1.62	1.27	1.10	None	11T Int
45BY	Taper	1.12	3.93	3.00	3/8-24	2.25 T
45BZ	Taper	1.04	3.65	2.72	5/16-24	2.25 T
45CA	Straight	1.12	4.71	3.78	None	#18 Wdrf
45CB	Taper	1.62	2.24	2.07	7/16-14	1.50 T
45CC	None	1.62	1.27	1.10	None	None
45CE	Taper	1.62	2.24	2.07	7/16-14	1.50T
45DV	Straight	1.00	3.17	3.17	7/16-20	0.25 Sq
45EA	Straight	1.12	4.71	3.78	3/8-24	0.25 Sq
45ED	Taper	1.12	3.73	2.80	7/16-14	2.25T
45EE	Threaded	1.00	3.77	2.84	None	1-14 Ext

<sup>1</sup> Data is for informational purposes only. Dimensions are approximate.

<sup>2</sup> TRFB = distance from end (tip) of stub to rear face of cylinder block or, for the Vertical Performer, bottom face of oil base.

<sup>3</sup> TFS = distance from end (tip) of stub to first shoulder on stub.

<sup>4</sup> Early crankshafts had 3/8-16 threaded hole.

Notes - Replacement Engine	
Note No.	
1	USE 1.44" O.D. FRONT PTO STUB SHAFT FROM ORIGINAL ENGINE OR SUPPLY 190-0577 KIT.
2	MIGHT REQUIRE CRANKSHAFT SPACER P/N 104-1694 IF MOUNTING ELECTRIC CLUTCH.
3	USE FRONT BELT DRIVE PULLEY FROM ORIGINAL ENGINE (2.00" BLOWER WHEEL PTO PILOT DIA. ONLY) OR SUPPLY 190-0576 KIT.
4	REPLACEMENT ENGINE SUPPLIED WITHOUT OIL PRESSURE LINE. SUPPLY 541-0238 KIT IF REQUIRED.
5	REQUIRES 541-0307 PTO SPACER KIT IF POWER TAKEN FROM BLOWER WHEEL END. IF STATIONARY GUARD REQUIRED, SUPPLY 541-0369 KIT.
6	USE ELECTRIC CLUTCH ADAPTER FROM ORIGINAL ENGINE OR SUPPLY P/N 190-0597.
6.1	USE ROCKFORD CLUTCH FROM ORIGINAL ENGINE OR SUPPLY 190-0289 KIT.
7	ORIGINAL ENGINE HAD BLOWER WHEEL WITH 1.94" PTO PILOT DIA. PERFORMER BLOWER WHEEL HAS 2.00" PTO PILOT DIA. SEE APPENDIX E.2.
8	EARLY MODELS WITH SINGLE PIECE HYDRAULIC PUMP/BEARING PLATE: REQUIRES 541-0344 SAE "A" HYDRAULIC PUMP ADAPTOR KIT. LATER MODELS WITH SEPARATE HYDRAULIC PUMP ADAPTOR: REUSE ADAPTOR FROM ORIGINAL ENGINE OR SUPPLY 541-0344 KIT.
9	EARLY MODELS WITH SINGLE PIECE HYDRAULIC PUMP/BEARING PLATE: REQUIRES 541-0374 SAE "B" HYDRAULIC PUMP ADAPTOR KIT. LATER MODELS WITH SEPARATE HYDRAULIC PUMP ADAPTOR: REUSE ADAPTOR FROM ORIGINAL ENGINE OR SUPPLY 541-0374 KIT.
10	MIGHT REQUIRE 520-0820 STUD(S) FOR ACCESSORY MOUNTING TO REAR BLOCK FACE.
12	TAP FOUR (4) EXISTING 0.159 DIAMETER HOLES ON REAR BEARING PLATE WITH #10-32 UNF-2B THREAD, 0.5 MINIMUM DEEP, IF NECESSARY, FOR MOUNTING ELECTRIC CLUTCH.
13	READJUST ENGINE SPEED SETTINGS PER SALES CODE FOR SPECIFICATION NUMBER OF ORIGINAL EQUIPMENT ENGINE. SEE SERVICE MANUAL FOR ADJUSTMENT PROCEDURE.
14	ORIGINAL ENGINE HAD SPECIAL SCREW (P/N 146-0330) TO INCREASE LOW IDLE. REUSE OR INSTALL LONGER SCREW AS NEEDED.
15	REPLACEMENT ENGINE SUPPLIED WITH SIDE PULL GOVERNOR. REROUTE THROTTLE CABLE OR SUPPLY 541-0191 KIT IF FRONT PULL GOVERNOR REQUIRED.
16	ORIGINAL ENGINE HAD FIXED SPEED GOVERNOR. SUPPLY 541-0424 KIT IF REQUIRED.
17	IF NEEDED, USE REMOTE THROTTLE CABLE MOUNTING HARDWARE FROM ORIGINAL ENGINE (NO KIT AVAILABLE).
18	REPLACEMENT ENGINE SUPPLIED WITH REMOTE REAR PULL CHOKE. REROUTE CHOKE CABLE OR SUPPLY 541-0190 KIT IF FRONT PULL CHOKE REQUIRED.
19	ORIGINAL ENGINE HAD ELECTRIC CHOKE. SUPPLY 541-0412 REMOTE CHOKE KIT IF REQUIRED.
20	ORIGINAL ENGINE HAD 146-0502 FUEL CUT-OFF SOLENOID. SUPPLY BY P/N IF REQUIRED.
21	MIGHT REQUIRE TWO (2) 520-0852 INTAKE MANIFOLD STUDS.
22	ORIGINAL ENGINE HAD OUTER OIL FILL TUBE & INDICATOR. SUPPLY 541-0434 KIT. (P224)
22.1	SUPPLY 541-0301 INNER OIL FILL TUBE KIT.
23	ORIGINAL ENGINE HAD NON-STD ANGLE OIL FILL; REPLACEMENT ENGINE HAS EXTENDED. MIGHT REQUIRE 541-0434 (OUTER) OR 541-0433 (INNER) KITS. (NH SERIES)
24	ORIGINAL ENGINE HAD SPECIAL OIL FILL TUBE; MIGHT REQUIRE 541-0300 (OUTER) KIT.
25	ANGLED INSTALLATION REQUIRES DIPSTICK P/N 123-1630 (11 DEG, FRONT UP).
26	ORIGINAL ENGINE HAD NON-STANDARD OIL FILL. SEE F-734 <u>PERFORMER ENGINE OPTIONS &amp; KITS.</u>
27	ANGLED INSTALLATION REQUIRES DIPSTICK P/N 123-1404 (4 DEG, FRONT DOWN).

Note No.	
28	ORIGINAL ENGINE HAD OPTIONAL OIL FILTER; SUPPLY BY P/N IF REQUIRED.
29	USE REMOTE OIL FILTER ASSEMBLY FROM ORIGINAL ENGINE OR SUPPLY 122-0554 KIT OR INDIVIDUAL PARTS BY P/N.
30.1	ORIGINAL ENGINE HAD OPTIONAL HI CAPACITY OIL BASE SYSTEM (8.65" CRKSHFT CNTRLN HT). REUSE OR ORDER PARTS PER SALES CODE(S) FOR SPEC # OF ORIG ENG. MAJOR COMPONENTS INCL OIL BASE, PICKUP TUBE, & FILL TUBE/INDICATOR, AND BLOWER HOUSING (3 QT BASE ONLY).
31	SHIM REPLACEMENT ENGINE TO CORRECT CRANKSHAFT HEIGHT.
32	ORIGINAL ENGINE USED 193-0108 OIL PRESSURE SENDER; SUPPLY BY P/N.
33	IF ORIGINAL ENGINE HAS THREADED EXHAUST PIPE SCREWED DIRECTLY INTO CYLINDER BLOCK, SUPPLY 541-0370 THREADED EXHAUST FLANGE KIT.
34	ORIGINAL ENGINE HAD 501-0203 FLEX OIL LINE; SUPPLY BY P/N IF REQUIRED.
35	ORIGINAL ENGINE HAD OIL BASE WITH TAPPED MOUNTING FEET; MOUNT REPLACEMENT WITH STANDARD HARDWARE.
36	SUPPLY 541-0458-02 HIGH CAPACITY AIR CLEANER KIT.
36.1	ORIGINAL ENGINE HAD AIR CLEANER WITH FITTING FOR RESTRICTION INDICATOR; SUPPLY BY P/N (REF: SALES CODE 19BA).
37	USE REMOTE AIR CLEANER ADAPTER ASSEMBLY COMPONENTS FROM ORIGINAL ENGINE (T260G, PERFORMER P224G & P216/P218/P220G (BEGIN SPEC C) ENGINES ONLY) OR SUPPLY 541-0320 KIT.
38	ORIGINAL ENGINE SUPPLIED LESS AIR CLEANER; REPLACEMENT ENGINE SUPPLIED WITH AIR CLEANER. IF NECESSARY, SUPPLY 541-0320 REMOTE A/C ADAPTER AND/OR 541-0147 ELBOW KITS AND REPLUMB PIPING AS REQUIRED.
39	FOR 1-3/4" REMOTE AIR CLEANER ADAPTER SYSTEMS, SUPPLY 541-0320 ADAPTER (2") KIT AND, IF NECESSARY 541-0147 ELBOW KIT AND P/N 140-1240 HOSE ADAPTER (2.00/1.75") AND REPLUMB PIPING AS REQUIRED.
40	SUPPLY 541-0147 REMOTE AIR CLEANER ELBOW KIT IF REQUIRED.
41	ORIGINAL ENGINE HAD INTAKE MANIFOLD WITH A VACCUM TAP; MODIFY MANIFOLD AS REQUIRED.
42.1	ORIGINAL ENGINE HAD EXHAUST HEAT SHIELDS; REUSE OR SUPPLY 541-0419 KIT. (STEINER ONLY: NOT ALL PARTS IN KIT WILL BE USED.)
43	ORIGINAL ENGINE HAD FLANGE MOUNTED REAR OUTLET EXHAUST TUBES; SUPPLY 541-0257 KIT.
44	ORIGINAL ENGINE HAD 1.50" OD EXHAUST STUB ADAPTORS; SUPPLY 542-7129 KIT.
46	ORIGINAL ENGINE HAD FLANGE MOUNTED REAR OUTLET EXHAUST TUBES; SUPPLY 541-0400 KIT.
47	ORIGINAL ENGINE EXHAUST SYSTEM MIGHT NOT FIT PERFORMER ENGINE. IF NECESSARY, SEE F-734 <u>PERFORMER ENGINE OPTIONS &amp; KITS</u> .
48	ORIGINAL ENGINE HAD CROSSOVER EXHAUST MANIFOLD WHICH WILL NOT FIT P224 ENGINE. MIGHT REQUIRE 542-7119 OR 542-7120 KIT.
49	ORIGINAL ENGINE HAD EXHAUST TUBES AND/OR HEAT SHIELDS. SUPPLY 541-0187 (TUBES) AND/OR 541-0188 (HEAT SHIELDS) KIT(S).
50	ORIGINAL ENGINE HAD EXHAUST TUBES AND/OR HEAT SHIELDS. SUPPLY 541-0202 (HEAT SHIELDS) AND/OR 541-0203 (TUBES) KIT(S). EXCEPTION: 541-0203 NOT APPLICABLE TO B48G/CUB CADET/IH.
51	ORIGINAL ENGINE HAD EXHAUST TUBES. SUPPLY P/N 154-2158 & 154-2159.
51.2	ORIGINAL ENGINE HAD 1.12" OD EXHAUST STUB ADAPTORS. SUPPLY 541-0234 KIT.
52	ORIGINAL ENGINE HAD 1.28" OD EXHAUST STUB ADAPTORS; SUPPLY 542-7214 KIT IF REQUIRED.

Note No.	
53	ORIGINAL ENGINE HAD CROSSOVER EXHAUST MANIFOLD. SUPPLY 542-7120 KIT.
54	SUPPLY 541-0197 CROSSOVER EXHAUST MANIFOLD KIT.
55	ORIGINAL ENGINE HAD CROSSOVER EXHAUST MANIFOLD. SUPPLY 542-7119 KIT.
56	ORIGINAL ENGINE HAD CROSSOVER EXHAUST MANIFOLD. SUPPLY 541-0200 KIT.
57	ORIGINAL ENGINE HAD CROSSOVER EXHAUST MANIFOLD. SUPPLY 541-0201 KIT.
58	SUPPLY 541-0206 REMOTE AIR CLEANER KIT; MIGHT REQUIRE NEW PIPING OR REPLUMBING FROM REMOTE A/C TO CARBURETOR. NOTE: SOME NHC SPEC A-C WILL REQUIRE CONVERSION FROM ORIG SIDE DRAFT CARB/STD A/C TO DOWN DRAFT CARB/REMOTE A/C.
59	GRAVELY MUFFLER P/N 31719 REQUIRED FOR CCKA APPLICATION; OPTIONAL FOR B SERIES.
60	ORIGINAL ENGINE HAD CYLINDER AIR HOUSINGS WITH WELD NUTS; REUSE OR SUPPLY BY P/N (REF: SALES CODE 23DK).
61	ORIGINAL ENGINE HAD STATIONARY GUARD. SUPPLY 541-0296 (WITHOUT PTO HOLE) OR 541-0369 (WITH PTO HOLE) KIT.
62	ORIGINAL ENGINE DELETED ROTATING BLOWER WHEEL SCREEN. REMOVE SCREEN <u>ONLY</u> IF COOLING AIR INLET PROTECTED OR STATIONARY GUARD USED (541-0296 (W/O PTO HOLE) OR 541-0369 (W/ PTO HOLE) KITS).
62.1	REUSE OIL BASE COOLING BAFFLE FROM ORIGINAL ENGINE OR SUPPLY BY P/N (REF: SALES CODE 23DV).
63	SUPPLY P/N 503-1396 BREATHER HOSE (TRIM LENGTH AS REQUIRED; CLAMP BOTH ENDS), P/N 517-0252-01 HOLE PLUG (INSTALL IN BLOWER HOUSING. SECURE BY BENDING TABS.), AND P/N 145-0551 REMOTE AIR CLEANER ELBOW.
64	SUPPLY 541-0259 35 AMP ALTERNATOR KIT.
65	ORIGINAL ENGINE HAD INNER OIL FILL TUBE. SUPPLY 541-0433 KIT. (P224)
66	ORIGINAL ENGINE HAD RECOIL STARTER; REPLACEMENT ENGINE SUPPLIED WITH ELECTRIC STARTER.
67	MAY REQUIRE STARTER P/N 191-1828 (INERTIA DRIVE) IF STANDARD STARTER (SOLENOID SHIFT) INTERFERES.
68	ORIGINAL ENGINE HAD 1 TERMINAL (N.O.) OR 2 TERMINAL (N.O./N.C.) LOP SWITCH; SUPPLY 541-0319 KIT. SEE SERVICE MANUAL AND INSTRUCTION SHEET E-313 FOR WIRING DIAGRAM.
69	ORIGINAL ENGINE HAD 1 TERMINAL (N.C.) LOP SWITCH; SUPPLY 541-0235 KIT (CAN BE USED TO ACTIVATE LIGHT). SEE SERVICE MANUAL AND INSTRUCTION SHEET E-313 FOR WIRING DIAGRAM.
70	ORIGINAL ENGINE HAD 2 TERMINAL (N.O.) LOP SWITCH; SUPPLY 541-0236 KIT. SEE SERVICE MANUAL AND INSTRUCTION SHEET E-313 FOR WIRING DIAGRAM.
71	ORIGINAL ENGINE HAD 4 PIN CONNECTOR WIRING. SEE SERVICE MANUAL AND INSTRUCTION SHEET E-313 FOR WIRING DIAGRAM.
71.1	ORIGINAL ENGINE HAD 9 PIN CONNECTOR WIRING HARNESS. SEE SERVICE MANUAL, INSTRUCTION SHEET E-313, AND OEM INFO FOR WIRING DIAGRAM, OR SUPPLY BY P/N.
71.2	ORIGINAL ENGINE HAD 6 PIN CONNECTOR WIRING. SEE SERVICE MANUAL AND INSTRUCTION SHEET E-313 FOR WIRING DIAGRAM.
71.3	ORIGINAL ENGINE HAD 3 PIN CONNECTOR WIRING HARNESS. SEE SERVICE MANUAL, INSTRUCTION SHEET E-313, AND OEM INFO FOR WIRING DIAGRAM, OR SUPPLY BY P/N.
72	ORIGINAL ENGINE HAD HIGH TEMPERATURE SWITCH; SUPPLY P/N 309-0559. SEE INSTRUCTION SHEET E-313 FOR WIRING DIAGRAM.
73	SUPPLY 541-0190 CHOKE KIT. NOTE: ON PERFORMER HORIZONTAL MODELS, 541-0190 KIT IS FRONT PULL CHOKE; ON PERFORMER VERTICAL MODELS, KIT IS REAR PULL CHOKE.
75	ORIGINAL ENGINE HAD DIODE IN WIRING HARNESS; SUPPLY 541-0436-01 (ALL PERFORMERS EXCEPT P224) OR 541-0436-02 (P224 ONLY) LOP SWITCH/HARNESS KIT.

Note No.	
76	ORIGINAL ENGINE HAD SPECIAL WIRING HARNESS; USE EXISTING HARNESS OR SUPPLY P/N'S 338-2575 AND 338-2640. REPLACEMENT ENGINE WILL HAVE CONNECTOR KIT 541-0195.
77	SUPPLY 541-0194 (USED WITHOUT LOW OIL PRESSURE SHUTDOWN) OR 541-0240 (USED W/ LOP SHUTDOWN) CONTROL PANEL KIT. PERFORMER CONTROL PANELS DON'T USE GAGES. NOTE: 541-0240 REQUIRES 2T/N.O. LOP SWITCH (REF: SALES CODE 35AV OR 35BV).
79	ALL POWER TAKEN OFF FRONT. WILL SUPPLY SPLINED CRANKSHAFT FOR "NO REAR PTO" AND SOME TAPERED REAR STUB CRANKSHAFTS.
80	REQUIRES 1" SPACER BENEATH OIL BASE FEET TO ALIGN CRANKSHAFT CENTERLINE.
80.1	USE CRANKSHAFT BALANCE WEIGHT FROM ORIGINAL ENGINE OR SUPPLY P/N 104-1156 OR 104-1712 AS REQUIRED. EXCEPTION: WEIGHT NO LONGER REQUIRED FOR B48G/TORO.
81	REQUIRES CONVERSION KIT FROM JOHN DEERE WHEN REPLACING KOHLER KT-17 ENGINE.
82	REPLACEMENT REQUIRES MILLER ELECTRIC KIT P/N 128623.
83	SUPPLY 541-0191 FRONT PULL GOVERNOR KIT.
84	SUPPLY 541-0239 7" PILOT ADAPTER KIT.
85	REQUIRES 541-0344 SAE "A" HYDRAULIC PUMP ADAPTOR KIT.
86	REQUIRES 541-0374 SAE "B" HYDRAULIC PUMP ADAPTOR KIT.
87	USE CLUTCH FLYWHEEL FROM ORIGINAL ENGINE OR SUPPLY P/N 104-0614.
88	SUPPLY 541-0405 EXHAUST TUBE KIT.
89	SUPPLY 541-0406 EXHAUST TUBE KIT.
90	SUPPLY 541-0370 THREADED EXHAUST FLANGE KIT.
91	EXHAUST SYSTEM ON ORIGINAL ENGINE WILL NOT FIT ON PERFORMER ENGINE. SEE F-734 <u>PERFORMER ENGINE OPTIONS &amp; KITS</u> .
92	OMIT CRANKSHAFT KEY ON REAR PTO STUB PER WELDER MANUFACTURER.
93	ORIGINAL ENGINE USED 309-0527 LOP SWITCH; SUPPLY BY P/N.
94	ORIGINAL ENGINE HAD 309-0329 HATKO SWITCH. NOT AVAILABLE ON PERFORMER.
95	REPLACEMENT ENGINE HAS DIFFERENT ENGINE MOUNTING BOLT HOLE DIAMETER & PATTERN. REQUIRES MODIFICATION. SEE <u>THE ONAN PERFORMER 24 REPLACEMENT ENGINE OUTLINE DRAWING, F-749. (NH)</u>
96	MIGHT REQUIRE CRANKSHAFT SPACER P/N 104-1681 IF MOUNTING ELECTRIC CLUTCH.
97	SUPPLY 541-0418 TWO SPEED GOVERNOR KIT.
98	REPLACEMENT REQUIRES TORO/WHEELHORSE KIT P/N 117295. (T260)
99	SEE APPENDIX E.1. (T260)
100	SUPPLY 541-0373 OUTER EXTENDED OIL FILL TUBE KIT.
101	SUPPLY 541-0296 STATIONARY GUARD KIT (WITHOUT PTO ACCESS HOLE).
102	SUPPLY 541-0369 STATIONARY GUARD KIT (WITH PTO ACCESS HOLE).
103	SUPPLY 541-0194 ENGINE CONTROL PANEL KIT (USED WITHOUT LOW OIL PRESSURE SHUTDOWN). PERFORMER CONTROL PANELS DON'T USE GAGES.
104	SUPPLY 541-0240 ENGINE CONTROL PANEL KIT (USED WITH LOW OIL PRESSURE SHUTDOWN). REQUIRES 2T/N.O. LOP SWITCH (REF: SALES CODE 35AV/35BV). PERFORMER CONTROL PANELS DON'T USE GAGES.
105	USE EXHAUST SYSTEM FROM ORIGINAL ENGINE OR SUPPLY 541-0377 (EXHAUST MANIFOLD- LEFT REAR OUTLET) AND/OR 541-0188 (EXHAUST HEAT SHIELD) KITS.
106	SUPPLY 541-0402 LP CARBURETOR KIT. REQUIRES WITHDRAWAL KIT.
107	ORIGINAL ENGINE MIGHT HAVE BEEN MODIFIED BY EQUIPMENT MFR. WITH LP ONLY OR DUAL FUEL (LP, GASO). SUPPLY KITS AS REQUIRED. SEE F-734 <u>PERFORMER ENGINE OPTIONS &amp; KITS</u> OR L-740 <u>PRICE LIST</u> .
108	ORIGINAL ENGINE HAD DUAL FUEL (LP, GASO) CARBURETOR. SUPPLY 541-0447 KIT IF REQUIRED.
109	SUPPLY PREMIUM SOLENOID SHIFT STARTER (SIDE SOL) P/N 191-1949-07.



Note No.	
110	USE SAE A HYDRAULIC PUMP ADAPTOR FROM ORIGINAL ENGINE OR SUPPLY 541-0344 KIT.
111	USE SAE B HYDRAULIC PUMP ADAPTOR FROM ORIGINAL ENGINE OR SUPPLY 541-0374 KIT.
112	SUPPLY 541-0411 STARTER CAP KIT.
113	REPLACEMENT REQUIRES E-Z-GO KIT P/N 27526-G01. (P220)
114	ORIGINAL ENGINE HAD SPECIAL 6 PIN CONNECTOR WIRING HARNESS. SUPPLY P/N 338-2216.
115	ORIGINAL ENGINE HAD SPECIAL 6 PIN CONNECTOR WIRING HARNESS. SUPPLY P/N 338-2843.
116	SUPPLY PREMIUM SOLENOID SHIFT STARTER (DOWN SOL) P/N 191-1949-05.
117	SUPPLY 541-0372 CHOKE KIT. NOTE: ON PERFORMER VERTICAL MODELS, KIT IS FRONT PULL CHOKE; ON PERFORMER HORIZONTAL MODELS, KIT IS REAR PULL CHOKE.
118	ORIGINAL ENGINE HAD SPECIAL 4 PIN CONNECTOR/3 WIRE WIRING HARNESS. SUPPLY P/N 338-2454-01.
119	SUPPLY 541-0445 LP CARBURETOR KIT. REQUIRES WITHDRAWAL KIT.

## Engine Identification - Model

A typical Model Number is made up of several sets of information. The following charts will assist in identifying Onan Industrial Engines (Air Cooled unless otherwise noted):

**Example:**    CCK    -    S    /    881    F  
                    1                                   2       3       4       5

1. ENGINE FAMILY	NO. OF CYL.	CID	2. POWER TAKE-OFF/DESIGN FEATURE CODE
BF	2		F = Clutch Drive
BG	2		
CK	2		G = Gear Reduction Drive (2G = 2:1, 4G = 4:1, etc)
CCK	2		
CCKA	2		M = Electric Starter
CCKB	2		
CCKM <sup>a</sup>	2		MF = Electric Starter & Clutch Drive
RCCK <sup>b</sup>	2		
J60, JB	2	60	MG = Electric Starter & Gear Reduction Drive (2MG = 2:1, 4MG = 4:1, etc)
J120, JC	4	120	
JCM <sup>a</sup>	4		MS = Electric Starter & Stub Shaft
L25	1	25	MT = Electric Starter with Transmission (4MT = 3.9:1)
NB	1		
NH	2		S = Stub Shaft PTO (Manual Start)
NHA	2		
NHB	2		T = Transmission Drive - Clutch & Gear Transmission
NHBV <sup>c</sup>	2		(2T = 2:1 or 2.5:1, 4T = 4:1)
NHC	2		
NHCV <sup>c</sup>	2		V = Vacu-Flo Cooling
NHP <sup>d</sup>	2		

3. DIAGONAL LINE: Separates unit characteristics from specification number and letter.

4. SPECIFICATION NUMBER: Denotes customer requested deviations from the standard model.

5. SPECIFICATION LETTER: Denotes major change(s) in the unit series at the factory level.

<sup>a</sup> M = Military

<sup>b</sup> R = Liquid or Radiator Cooled

<sup>c</sup> V = Vacu-Flo Cooling

<sup>d</sup> P = LP Fueled

Example:  $\frac{\text{B}}{1} \frac{43}{2} \frac{\text{M}}{3} - \frac{\text{G}}{4} \frac{\text{A}}{5} \frac{016}{6} / \frac{3588}{8} \frac{\text{A}}{9}$

1. ENGINE SERIES: B, N, T
2. DISPLACEMENT: In cubic inches.
3. DUTY CYCLE: E = Basic medium duty, M = medium duty, G = higher duty cycle version.
4. FUEL: G = gasoline fueled.
5. COOLING: A = air cooled.
6. HORSEPOWER: 016 = 16 BHP, 018 = 18 BHP, etc.
7. DIAGONAL LINE: Separates unit characteristics from specification number and letter.
8. SPECIFICATION NUMBER: Denotes customer requested deviations from the standard model.
9. SPECIFICATION LETTER: Denotes major change(s) in the unit series at the factory level.

A derivative of the above format involves the T260G engine. It is similar except for the following:

- a. 2 = Two Cylinder

Example:  $\frac{\text{P}}{1} \frac{2}{2} \frac{16}{3} \frac{\text{G}}{4} - \frac{\text{I}}{5} / \frac{11251}{7} \frac{\text{D}}{8}$

1. ENGINE SERIES: P = Performer
2. NUMBER OF CYLINDERS: 2 = Two cylinder.
3. HORSEPOWER: 16 = 16 HP, 18 = 18 HP, etc.
4. CRANKSHAFT PLANE: G = Horizontal, V = Vertical.
5. FUEL: I = Gasoline fueled. (Note: Some early models may be gaseous), L = LP fueled, D = Dual fueled - gasoline/LP.
6. DIAGONAL LINE: Separates unit characteristics from specification number and letter.
7. SPECIFICATION NUMBER: Denotes customer requested features (standard or optional).
8. SPECIFICATION LETTER: Denotes major change(s) in the unit series at the factory level.

## Engine Mounting Comparison Data

Engine	A Crankshaft C/L Ht (in)	W x L Bolt Hole Pattern (in)	Figure
CCK-MS	8.65	12.25 x 7	1
CCK-S (Manual Start)	6.83	12.25 x 7	1
N Series	8.65	12.25 x 7	1
RCCK	8.65	12.25 x 7	1
B Series (Std)	6.59	7.25 x 8.94	2
B Series (Opt, Miller)	7.48	7.25 x 8.94	2
N52M	6.59	7.25 x 8.94	2
P Series (Std, exc P224)	6.59	7.25 x 8.94	2
P Series (Opt, P224)	8.65	7.25 x 8.94	2
T260	7.50	7.25 x 8.94	2

Figure 1

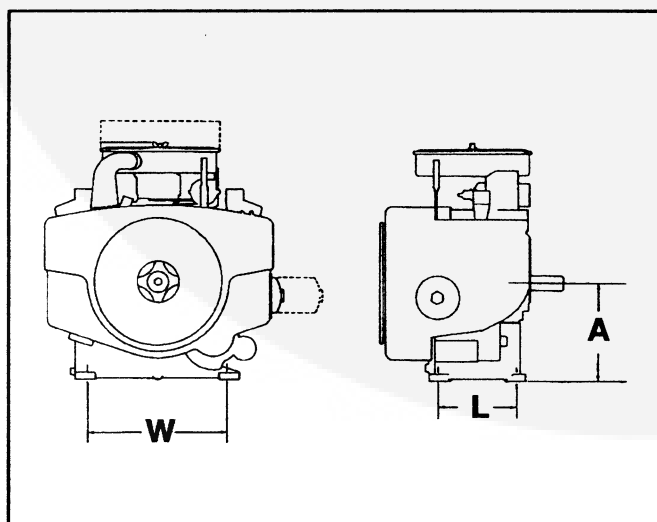
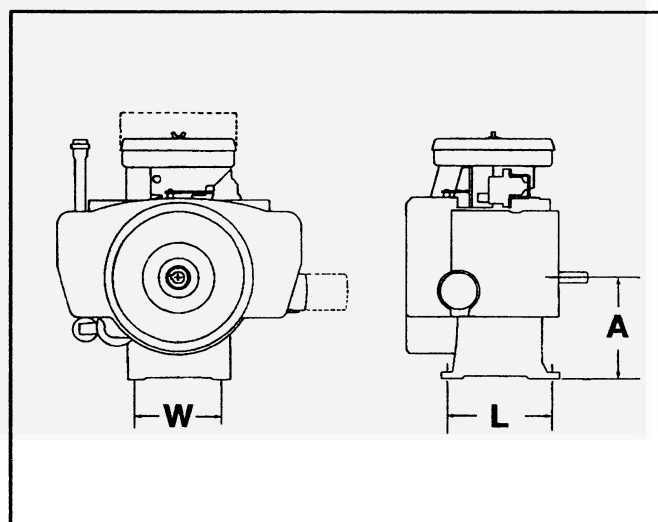
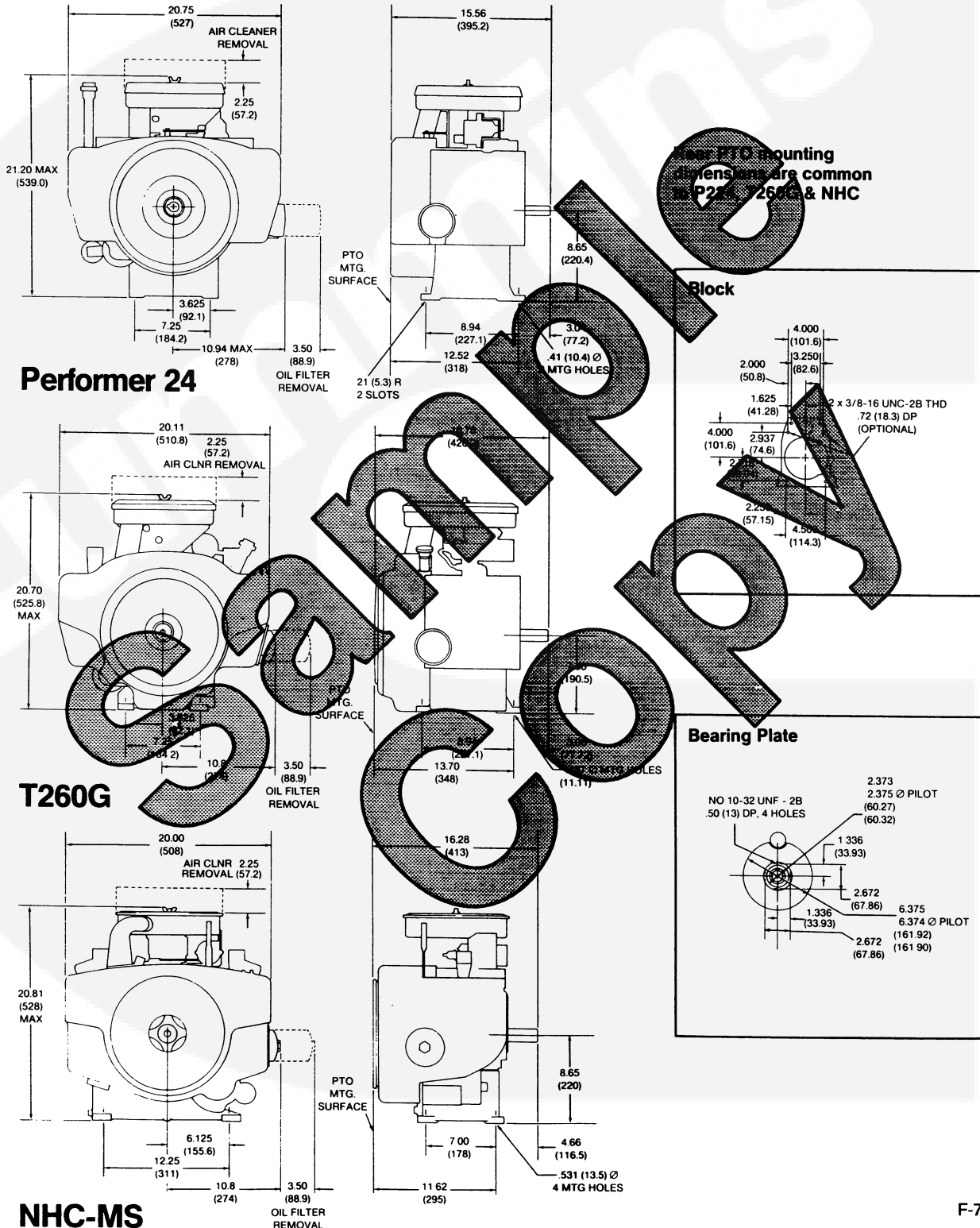


Figure 2



# The Onan Performer 24 Replacement Engine For the NHC-MS and T260G Engines



F-749

## **Appendix E.1 Replacing T260G With Performer P224G.**

When considering the P224G as a replacement for the T260G, the major compatibility issues are: 1) the difference in crankshaft centerline height (distance from the center of the crankshaft to the engine mounting base surface), and 2) if the six (6) hole block is required. The six (6) hole block feature is available only as a factory equipped option. On some T260G models the six (6) hole block was standard equipment and as such might not have been required for a particular application. The four (4) hole block is standard equipment on all base and stock Performer models. Note: The Onan hydraulic pump adapters (Ref: Sales Codes 11BE and 11BF) use the standard four (4) block; the six (6) hole block is not required.

Other important considerations include access to service locations, particularly the oil fill tube and indicator, exhaust system compatibility, if power is taken off the blower wheel end (PTO spacer kit required), and other functional requirements of the original engine.

See Appendix D and F-749 The Onan Performer 24 Replacement Engine outline drawing.

### **Starter**

An inertia drive starter was used on the T260G: first as standard equipment and then as an option when the solenoid shift starter became standard beginning Spec G. A solenoid shift starter (side solenoid) is standard on the Performer. This should not be a problem regarding fit-up within the engine compartment except possibly in tight quarters applications; a solenoid shift starter with down solenoid or an inertia drive starter is available for the P224G if necessary. Note: T260G and Performer starters are not interchangeable.

### **Simon Aerial, Genie - Aerial Manlift Applications**

The factory equipped engine might have been modified for or by the OEM with one or more of the following options: 1) two (2) speed solenoid actuated governor, 2) remote solenoid actuated choke, and 3) dual (gasoline, LP) or straight LP fuel system. LP withdrawal hardware was typically mounted on cylinder No. 2 (RH) side. These options are available as Onan kits; supply as required. Parts from the original T260 engine should not be reused.

## **Appendix E.2 Replacing NH With Performer P224G**

### **Flywheel/Blower Wheel**

Some early NH applications used a blower wheel machined for front PTO with a 1.94" pilot diameter and 3/8-16 tapped holes on a 2.62" diameter bolt circle when power was taken off the front (e.g. Owatonna). The Performer blower wheel has a 2.00" pilot dia. with 5/16-18 tapped holes on a 2.75" dia. bolt circle. This is not a problem if the original engine did not take power from the blower wheel end of the engine. For old units that bolted a PTO shaft (or similar arrangement) to the blower wheel, the original shaft must be modified and adapted or a new shaft used. One possible alternative is to use the 190-0577 PTO shaft (1.44" dia) kit and adapt the shaft to fit the application. A kit is available if a stationary guard is required.

## Performer Standard Replacement Engines -

CUSTOMER/TYPE ----->	LINCOLN	MILLER
SPECIAL ----->	3600	
MODEL ----->	P216G	P216G
SPEC # ----->	10939	11090
CRKSHFT OPTION ----->	45BG	45BH

CUSTOMER/TYPE ----->	GRAVELY	CASE/ING	MILLER
SPECIAL ----->	BENDIX	1800/BENDIX	
MODEL ----->	P218G	P218G	P218G
SPEC # ----->	10930	10936	10937
CRKSHFT OPTION ----->	45CA	45BC	45BH

CUSTOMER/TYPE ----->	JACOBSEN	TORO	INDUST	DEERE	MILLER	TURF	E-Z-GO	DEERE	INTL/CUB	STOCK	STOCK	STOCK
SPECIAL ----->			1.44 dia ST	BENDIX	3600	1.12 dia ST		DOWN	BENDIX	9 T	11 T	13 T
MODEL ----->	P220G	P220G	P220G	P220G	P220G	P220G	P220G	P220G	P220G	P220G	P220G	P220G
SPEC # ----->	10931	10932	10933	10935	10938	10940	10944	11128	11249	11253	11254	11255
CRKSHFT OPTION ----->	45BB	45BJ	45BE	45BD	45BH	45BB	45BP	45BD	45BB	45BS	45BU	45BT

CUSTOMER/TYPE ----->	STOCK
SPECIAL ----->	1.00 dia ST
MODEL ----->	P220V
SPEC # ----->	10893
CRKSHFT OPTION ----->	45DV

CUSTOMER/TYPE ----->	STOCK	STOCK	STOCK	STOCK	STOCK
SPECIAL ----->	1.12 dia ST	1.44 dia ST	9T	11T	13T
MODEL ----->	P224G	P224G	P224G	P224G	P224G
SPEC # ----->	11256	11257	11258	11259	11260
CRKSHFT OPTION ----->	45BB	45BE	45BS	45BU	45BT









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